The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIII, No. 14 CHICAGO, ILLINOIS OCTOBER 3, 1914

THE SURGICAL TREATMENT OF EXOPHTHALMOS*

C. H. MAYO, M.D.

ROCHESTER, MINN.

Exophthalmos of slight degree may occur in high degrees of myopia, but when more marked it is commonly caused by the growth of soft tissue or bony tumors in the back of the orbit, and rarely it may be produced by arteriovenous aneurysm. The only constitutional disease causing the condition is exophthalmic goiter. The peculiar staring with widening of the palpebral fissure caused by myocardial disease is often confused with exophthalmos. In this way toxic goiter may be confused with true hyperthyroidism, as pointed out by Plummer.[1]

Exophthalmic goiter was described by various observers in the latter half of the eighteenth century, notably by Morgagni[2] and Parry,[3] followed in the first half of the nineteenth century by further writings of Parry, Flajani,[4] Graves,[5] Basedow[6] and numerous others. Each described the symptoms of hyperthyroidism with sufficient accuracy to leave no doubt that their observations were made on the same type of cases.

It was Graves, however, in his lectures in 1835, who laid the most stress on exophthalmos. Many observers do not consider the condition to be true Graves' disease unless the protrusion of the eye is marked enough to be easily recognized. This was correct, since early observers based their diagnoses on symptoms unsupported by pathologic evidence. If the other symptoms were present, it was considered pseudo-Graves' disease until exophthalmos occurred. Usually, however, the staring (of Stellwag), and the widening of the palpebral fissure (of Dalrymple) were accepted in lieu of exophthalmos.

The eye symptoms in hyperthyroidism are so striking in character and often so distressing to the mind of the patient that they have been made the subject of frequent observation. In extreme cases, erosions and ulcers of the cornea occur. I have observed two patients totally blind from this cause, and several patients blind in one eye. The lagging behind of the lids, which follow the movement of the eyeball with a jerking motion, was noted by Graefe[7]. Stellwag[8] noted the staring without winking for much longer intervals than common. Dalrymple[9] noted the unnatural widening of the palpebral fissure, and Möbius[10] observed that when exophthalmos was extremely marked, diplopia occurred on near vision. The exophthalmos was ordinarily considered a congestion of the venous plexus of vessels at the back of the orbit and therefore connected with the circulatory disturbance of the disease.

The late Dr. Landström,[11] of Stockholm, has given a most acceptable version of the development of exophthalmos in hyperthyroidism. He has shown that a previously undescribed microscopic muscle in streaked layers occurs in the fascia behind the eyeball and about the globe.

This irregular muscular sheath is attached forward to the lids and anterior orbital fascia. The muscle-bundles are irregularly placed and are scarcely to be distinguished macroscopically, but may readily be found microscopically. They are under the control of the sympathetic nervous system and their function is to resist the action of the four active orbital muscles which otherwise draw the eyeball back. When irritated, they draw the eyeball forward and the lids backward. This muscular system is additional to the well-known muscle of Müller.[12]

It was noted in 1873 that the irritation of the sympathetic ganglion caused dilatation of the iris with some protrusion of the globe. The experiments of Claude Bénard[13] confirmed these observations and showed that by the irritation of the cervical sympathetic the eyeball is pressed forward and to a certain degree the closure of the eyelids is prevented. It is therefore doubtless the sympathetic which innervates these muscles, and an irritation of its fibers doubtless affects this muscle first, the symptoms observed by Stellwag, Graefe and Dalrymple being produced as a direct result of such irritation.

Wiener[14] showed that irritation of the sympathetic ganglion caused increased intra-ocular tension, while its destruction caused lower tension for a time. This led to the operations on the sympathetic for the cure of glaucoma by lowering the tension and causing contraction of the iris.

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* Read before the Section on Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Plummer, H. S.: The Clinical and Pathologic Relationships of Hyperplastic and Non-Hyperplastic Goiter, THE JOURNAL A. M. A., Aug. 30, 1913, p. 650.
2. Morgagni: De sedibus et causis morborum, Cap. xxi, Art. 36; Cap. xvii, Art. 19; Cap. xxiii, Art. 4 and 6.
3. Parry: Collections from the Unpublished Medical Writings of the Late Caleb Hillier Parry, London, 1825, Elements of Pathology and Therapeutics, 1815.
4. Flajani: Collezione d' osservazioni, e reflessioni di chirurgia, p. 270.
5. Graves: London Med. and Surg. Jour., May 23, 1835 (Repr. System of Clinical Medicine, Dublin, 1843).
6. Basedow: Wchnschr. f. d. ges. Heilk., 1840, p. 13.
7. Graefe: Arch. f. Ophth., 1857, iii, 278.
8. Stellwag: Wien. med. Jahrb., 1869, p. 25.
9. Dalrymple: Jour. Morbid Anat., 1828, p. 43.
10. Möbius: Schmidt's Jahrb., 1886, No. 210, p. 237.
11. Landström: Ueber Morbus Basedowii, 1907.
12. Müller: Ztschr. f. Zool., 1858; Würzb. Verhandl., 1859.
13. Bénard: Contribution à l'étude du goitre exophthalmique, pathogénie, traitement, Paris, Thèse, 1882.
14. Wiener: Ueber einen Fall von Morbus Basedowii mit Tabes incipiens, Berlin, 1891, p. 31; Ueber die Basedowsche Krankheit, 1868.

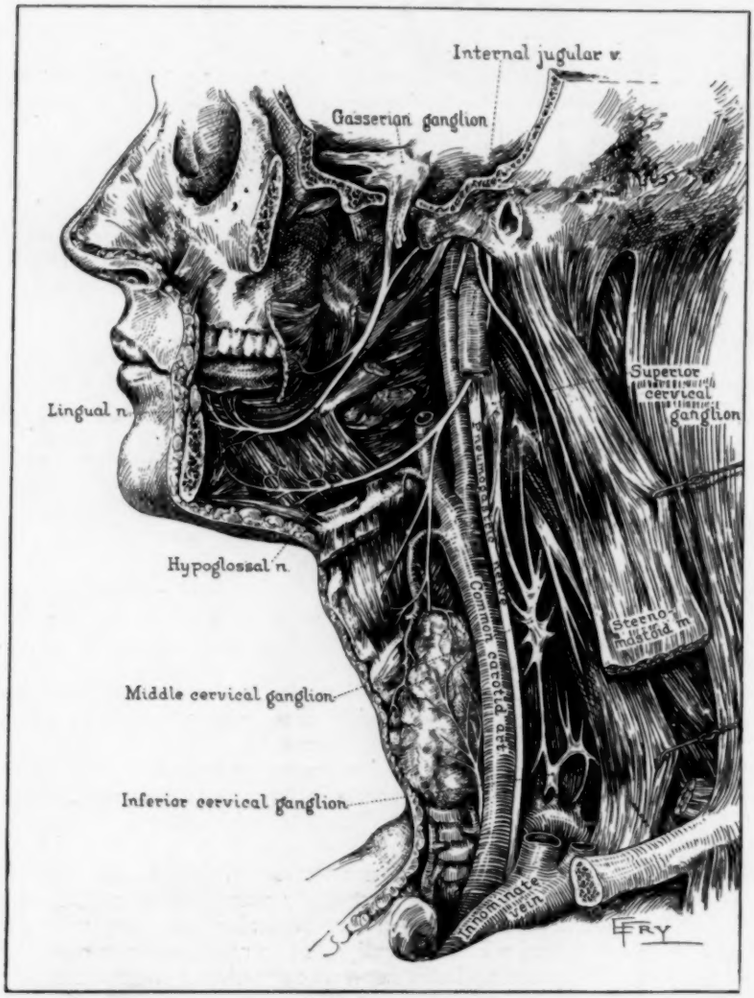

Fig. 1.—Showing position of superior, middle and inferior cervical ganlions.

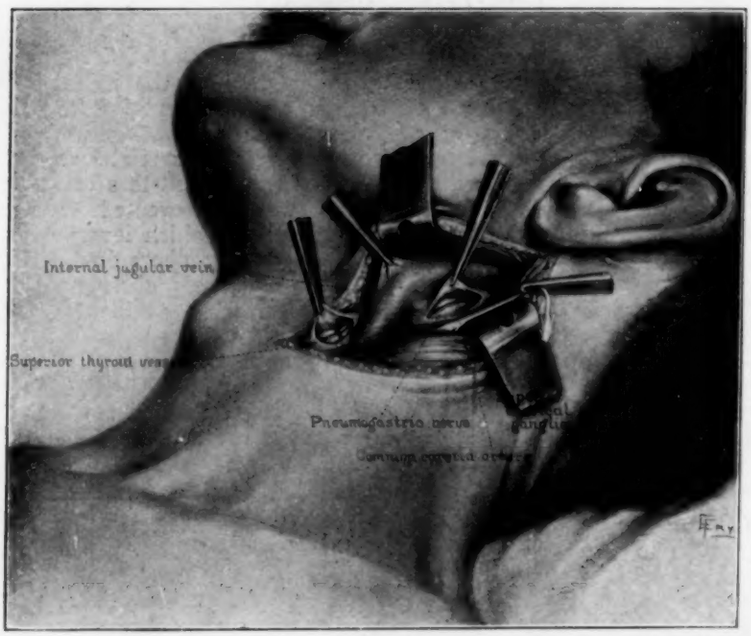

Fig. 2.—Shows incision into the sheath of the carotid vessels and exposure of pneumogastric nerve. Dissection of superior cervical ganglion and superior thyroid vessels ligated.

Trousseau[15] believed the cervical sympathetic to be involved in exophthalmic goiter, and an operation which would relieve this extremely marked feature of the disease was looked on by him as being at least theoretically advisable.

Jaboulay,[16] in 1896, was the first to introduce an operation on the sympathetic ganglion for exophthalmic goiter. His most enthusiastic disciples were Abadie and Jonnesco. While quite a number of operations on the cervical sympathetic for hyperthyroidism have been performed at a few clinics, especially Jonnesco's, and a few scattered operations have been performed at many clinics, the relief in general is apparently about the same as that which follows ligation of the vessels and injection of boiling water into the gland. The reduction of the exophthalmos is often very marked.

In 1906, before a meeting of French surgeons, Abadie[17] stated that this operation produced perfect cures while partial extirpation of the thyroid removed only part of the symptoms, and did not remove the exophthalmos. He maintained that sympathectomy would surely cause the disappearance of the exophthalmos.

Balacescu[18] believes that the removal of the whole of the cervical sympathetic is indicated and that no bad results follow the operation.

It is very certain that while the surgical ablation of the greater part of the thyroid cures in the majority of cases of hyperthyroidism, and even relieves eye-symptoms in most cases, yet in numerous instances this one feature remains to distress the patients when otherwise they feel very well.

Some of these patients are greatly improved by a secondary operation which consists of scalping the edge of both lids from a quarter to a third of an inch at the outer canthus and uniting the margins of the lid. The Jaboulay operation, that is, a cervical sympathectomy of the superior and sometimes of the middle ganglia (Fig. 1) for the purpose of reducing exophthalmos and securing a slight ptosis of the upper lids has been used in our clinic. In cases of hyperthyroidism in which the exophthalmos is extreme and the nervous symptoms out of proportion to the size of the thyroid, the sympathetic ganglia are removed and in the same incision the superior thyroid vessels are ligated. This operation can be done with novocain as a local anesthetic, but is preferably made with a general or combined anesthetic. Incisions are made in the lines of the natural creases in the neck opposite the bifurca-

15. Trousseau: A Report on Paper by Hiffelsheim before Paris Academy of Medicine in 1860; Cliniques, v, 571.
16. Jaboulay: Bull. de l'Acad. de méd., 1897, xxxviii.
17. Abadie: Traitement chirurgical du goitre exophthalmique, Cong. franç. de chir., 1906.
18. Balacescu: Arch. f. klin. Chir., 1902, p. 59.

tion of the carotid (Fig. 2). The sternomastoid is drawn outward and a blunt dissection is made down to the jugular and carotid veins, which are then drawn inward. The posterior sheath of fascia inclosing these vessels is opened that the vagus nerve may be kept under observation since this nerve is bulbous above this point and might be confused with the sympathetic.

Under normal conditions the sympathetic ganglion is one-eighth to one-fourth of an inch wide. Many branches lead from it on either side. The connecting branches are divided, the upper part of the ganglion torn off or cut and the lower portions of the nerve cut or torn off at the midlde ganglion unless the middle ganglion is also removed. The wound is closed without drainage.

When the sympathetic ganglion is thus removed with the middle cervical ganglion, the result is very good in securing relaxation of the eyeball and slight ptosis of the upper lid with great general improvement of symptoms. In some cases in which the sympathetic does not seem to occur as a ganglion, but in which fewer and larger communicating branches are found, the result has not been so good, some patients receiving but slight benefit from the operation, the operation seemingly being incomplete. The ease with which it is performed and the excellent results which frequently follow its employment, however, warrant its consideration for the relief of certain patients suffering from extreme degrees of exophthalmos.

In our cases in which the vessels of both upper poles were ligated in addition to the sympathectomy the primary results were good, but the time since operation is yet too short to warrant a positive statement as to the permanency of cure. Time will show just how extensive resections of the sympathetic may be made without causing complications.

ABSTRACT OF DISCUSSION

DR. DEAN LEWIS, Chicago: Notwithstanding the amount of work that has been done on exophthalmic goiter during the past ten years, we are still in doubt concerning the causes of the thyroid hyperplasia which gives rise to the symptoms, and which after it develops dominates the clinical picture. One of the most bothering symptoms and one which remains most frequently after operation is exophthalmos which in some instances is so marked as to be actually disfiguring and may lead to such exposure of the cornea that ulceration follows. The earlier operations on the cervical sympathetic were followed by marked improvement in this symptom, and the mechanism of the exophthalmos, as demonstrated by Landstrom, furnishes a basis for the operation suggested by Dr. Mayo. We are beginning to realize that all the ductless glands are intimately related and that in cases of ductless gland disarrangement we are dealing with a pluriglandular syndrome. We can expect ideal results when we can bring about a readjustment of these glands. At present we are not doing this, as would seem to be indicated by the frequency with which some symptoms persist even after most successful thyroidectomy. This operation controls the exophthalmos with a greater degree of certainty than any yet suggested, but should be reserved for the bad cases which are actually disfiguring or may result in ulceration of the cornea.

Cleanliness and Progress.—Truly our changed point of view denotes progress. Once cleanliness was a virtue; now the lack of it is a crime.—*Bull. Dept. Health, New York.*

APERIOSTEAL AMPUTATION*

HENRY H. M. LYLE, M.D.
Professor of Clinical Surgery in the College of Physicians and Surgeons of Columbia University; Attending Surgeon, St. Luke's Hospital
NEW YORK

In amputations there are four methods of treating the bone: periosteal, osteoplastic, tendinoplastic and aperiosteal. Modern surgical technic demands that both diaphyseal and epiphyseal amputations must yield stumps capable of directly supporting the whole weight of the body.

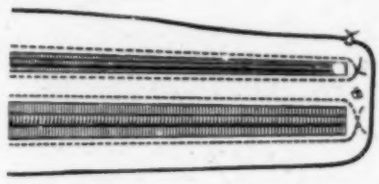

Fig. 1.—Periosteal method of treating the bone.

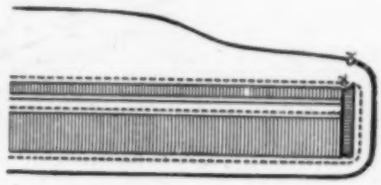

Fig. 2.—Osteoplastic method of treating the bone.

In the periosteal method (Fig. 1) the periosteum is divided at a sufficient distance below the saw-line to provide a covering for the raw bone. The functional results of this method cannot be compared with those obtained by the osteoplastic or the aperiosteal methods. In diaphyseal amputations an end-bearing stump is rarely obtained, and in amputations through the shaft of the femur the results are notoriously bad. Cramer[1] in a series of 96 cases of amputations through the thigh and leg found 70 bad stumps, and only 2 capable

Fig. 3.—Result after a Gritti-Stokes osteoplastic amputation of the thigh. A good end-bearing stump with no bone atrophy.

of bearing direct weight. In a personal study of 13 amputations through the thigh I found only 1 end-bearing stump. These amputations were performed in New York clinics, and the majority of them by our ablest surgeons; the fault lay not in the technic of the operator, but in the method. Of these cases

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Cramer: Klinischer Bericht über 96 Diaphysenstümpfe des ober- resp. Unterschenkels, Arch. f. Orthop., Mechanotherapie und Unfallchir., 1905, iii, 101.

12 healed by primary union and 1 by secondary intention; all had the usual artificial limbs applied at the end of three months. Bräunig[2] in 122 amputations of the thigh and leg found only a few with end-bearing stumps. Salomon[3] and others report similar results.

In the osteoplastic (Fig. 2) the raw bone surface and the medullary canal are covered by a bone flap whose periosteum has a normal connection. In this way the possibility of painful bony outgrowths, developing from the periosteum and marrow, is avoided. Given ideal conditions this method yields splendid results (Fig. 3), but it requires considerable practice to cut and fit the bone flap. In traumatic cases and cases of doubtful asepsis it is unsuited. If infection of the wound or necrosis of the bone flap occurs the result will probably be a failure. Pirogoff's[4] operation (1853) furnished an osteoplastic end-bearing stump. Contrary to what most writers have asserted, Pirogoff attached only a secondary importance to the osteoplastic feature; his main endeavor was to provide a procedure which would overcome the difficulties encountered in dissecting the heel flap of a Syme operation. Gritti[5] in 1857 introduced his osteoplastic transcondylar amputation. In spite of the favorable stumps obtained by these methods, surgery was slow to grasp the underlying principle, and it is to the efforts of Bier[6] and his pupils that the development of the modern osteoplastic methods is due. Bier's original view, that the raw surface of the bone and medullary canal remain tender, was erroneous; he now accepts that in a large measure the tenderness is due to the irregular bony outgrowths from the periosteum and endosteum of the medullary canal. Binnie[7] has modified Bier's method and uses a free bone transplant; this simplifies the technic and, according to Binnie, yields equally good results.

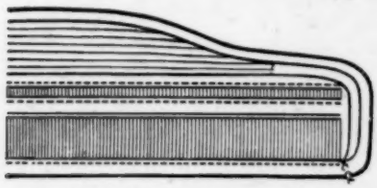

Fig. 4.—Tendinoplastic method of treating the bone.

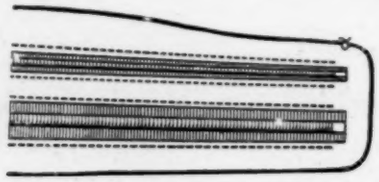

Fig. 5.—Aperiosteal method of treating the bone.

The tendinoplastic method (Duval-Wilms[8]) aims to cover the sawn bone by a broad tendon which is stitched to the periosteum (Fig. 4). This method is of limited application, although good functional stumps can be obtained at the knee, ankle and humerus, where the quadriceps tendon, Achilles tendon and triceps are available. It is of special value as a covering in the finger and metacarpal amputations.

The aperiosteal method aims to produce a painless, supporting stump, capable of early functional use (Figs. 5 and 6). Hirch's[9] investigation (1899) showed that in the old method of stripping up a periosteal cuff to cover the bone, many shreds of periosteum resulted. These shreds, still retaining their

Fig. 6.—Result of an aperiosteal amputation of the thigh in a man aged 64. Note smooth stump end and absence of bone atrophy. Patient was able to bear his whole weight on the end of the stump within fourteen days, and walked on a provisional peg leg within eighteen days.

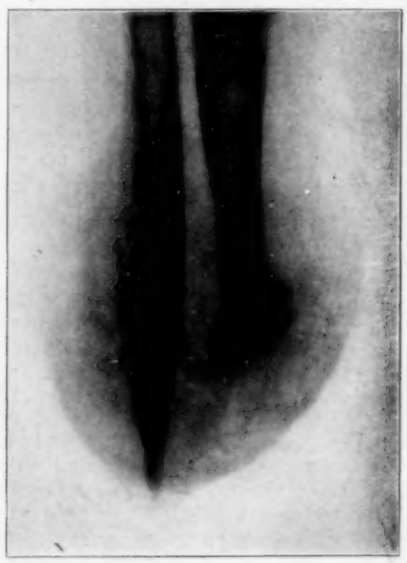

Fig. 7.—Painful, conical stump resulting from periosteal amputation of the leg.

2. Bräunig: Uber die Unterschenkelamputationen der Rostocker Universitätsklinik, Verhandl. d. nord-westdeutsch. Chir., October, 1911; Zentralbl. f. Chir., 1911, p. 1630.

3. Salomon: Die heute gebrauchlichste Methode der Unterschenkelamputation, Verhandl. d. nord-westdeutsch. Chir., October, 1911; Zentralbl. f. Chir., 1911, p. 1628.

4. Pirogoff: Osteoplastische Verlängerung der Unterschenkelknochen bei der Exarticulation des Fusses, Leipsic, 1854.

5. Gritti: Ann. Univ. d. Med., Milan, 1857; Cong. méd. de toutes les nations (1869) Bologne, 1870, p. 357.

6. Bier: Ueber plastische Bildung eines künstlichen Fusses aus der mit ihren weichteilen bedeckten Tibia nach tiefen Unterschenkelamputationen., Deutsch. Ztschr. f. Chir., 1892, xxxiv, 436; Ueber plastische Bildung tragfähiger Stumpfe nach Unterschenkelamputation, Verhandl. d. deutsch. Gesellsch. f. Chir., 1893, ii, 1; Weitere Mitteilungen über tragfähige Amputations-stumpfe im Bereich der Diaphyse, Arch. f. klin. Chir., 1895, i, 356; Operationstechnik für tragfähige Amputationsstümpfe, Zentralbl. f. Chir., 1897, p. 833; Samml. klin. Vortr., N. F., 1900, p. 264.

7. Binnie: Amputation of Leg, Quatrième Cong. de la Soc. Internat. de Chir., 1914.

8. Wilms: Zentralbl. f. Chir., 1902, p. 721; Verhandl. der deutsch. Gesellsch. f. Chir., 1904, i, 356.

9. Erzielung tragfähiger Stümpfe durch Nachbehandlung, Deutsch. med. Wchnschr., 1899, p. 776; Vorstellung eines Unterschenkelamputirten mit (durch Nachbehandlung) tragfähigen Stumpf und neuer Prothese, Verhandl. d. deutsch. Gesellsch. f. Chir., 1900, ii, 358; Einige Bemerkungen über die Behandlung der Gliederstümpfe, Deutsch. med. Wchnschr., 1908, xxxiv, 464.

primitive osteogenetic function, produced painful, bony spikes which interfered with the early functional use of the stump (Figs. 7, 8, 9 and 10). For this reason Hirsch reintroduced the Celsian method of dividing the bone and periosteum at the same level, adding to it massage, exercise and early functional use. Bunge[10] (1900) went a step further and advocated the removal of 1 cm. of the periosteum, and the scraping out of the bone-marrow for a similar distance. The correctness of Hirsch's and Bunge's views are substantiated by von Eiselsberg,[11] Kocher,[12] Moskowicz, Witzel[13] and Ranzi.[14] This method had an extensive practical test in the Russian-Japanese and Balkan wars. At the International Surgical Congress of 1914, Ranzi, from von Eiselsberg's clinic, reported on the results in aperiosteal amputations of the leg. In 75 cases, between the years 1901-1913, the end-results on 40 of these were obtained; 25 healed by primary union, 15 by secondary intention. In 31 cases end-bearing stumps were obtained, in 7 cases the results were fair, in 2 cases the results were not end-bearing. In the 15 cases which healed by secondary intention, 10 were completely satisfactory, 4 were fair and only 1 a failure. The ages of the patients varied from 20 to 80 years. The remarkable feature of this report is the number of successful stumps which were obtained in the infected cases. It is in just these cases that the periosteal method fails, as the inflammation leads to the production of exostoses.

Salomon reports similar results, and concludes that the aperiosteal method should be the normal procedure in amputations. In the production of end-bearing stumps, the prevention of atrophy is of as great importance as the prevention of bony outgrowths. The best-formed stump if not quickly put to use as a real support may become atrophied and useless (Figs. 11 and 12).

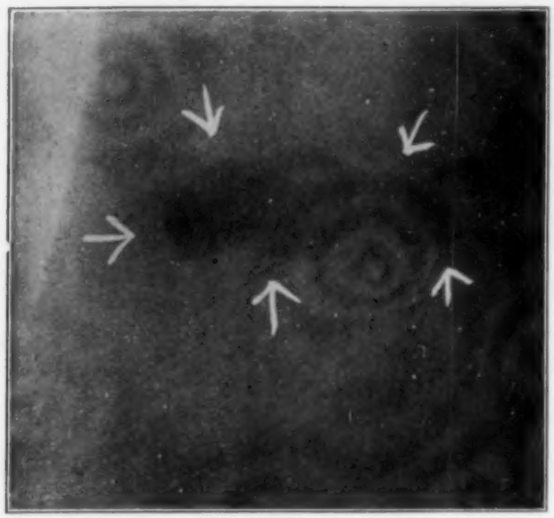

Fig. 8.—Subperiosteal disarticulation of the hip. Patient was unable to wear artificial leg on account of the pain caused by the bony spicules. Note bone atrophy, result of disuse.

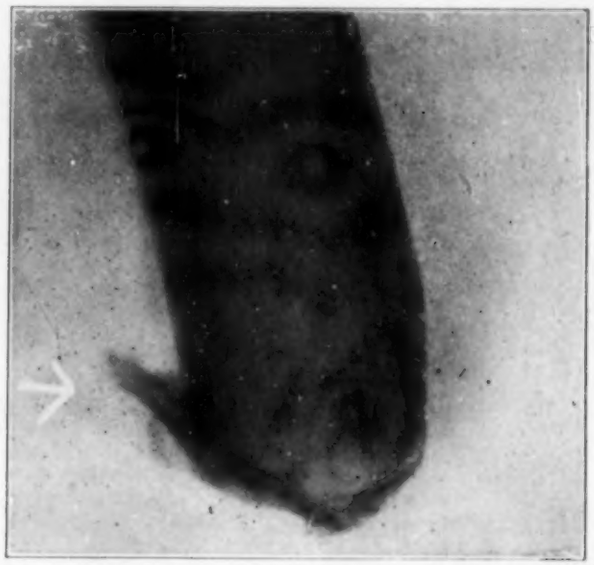

Fig. 9.—Painful stump due to bony spicules resulting form periosteal amputation of the thigh.

Fig. 10.—A painful conical stump after periosteal amputation of the thigh. Patient was unable to bear any weight.

Fig. 11.—Painful atrophic stump after periosteal amputation of the thigh, showing baneful results of disuse, stump shrinkers, etc.

APERIOSTEAL METHOD

Technic.—Sterilize skin with tincture of iodin. Use temporary hemostasis by ligature; permanent hemostasis by Perthes[15] pneumatic tourniquet. Employ the oblique circular incision of Kocher, or if flaps are indicated cut and suture

10. Bunge: Zur Technik und Kasuistik der osteoplastichen Unterschenkelamputation nach Bier, Deutsch. med. Wchnschr., 1899, p. 833; Weitere Beiträge zur Tragfähigkeit der Diaphysenstümpfe, Verhandl. d. deutsch. Gesellsch. f. Chir., 1901, i, 163; 1902, i, 54; 1904, i, 137; Zur Technik der Erzielung tragfähiger Diaphysenstumpfe ohne Osteoplastik, Beitr. z. klin. Chir., 1905, xlvii, 808.
11. Von Eiselsberg: Dem. d. k.-k. Ges. der Aerzte in Wiem am 12. February, 1904, Wien. klin. Wchnschr., 1904, p. 202.
12. Kocher: Chirurgische Operationslehre, Ed. 5; Jena, G. Fischer, 1907.
13. Witzel: Die Amputation, Rapports, Quatrième Cong. de la Soc. Internat. de Chir., 1914.
14. Ranzi: Ueber Unterschenkelamputation, Rapports Quatrième Cong. de la Soc. Internat. de Chir., 1914.
15. Perthes: Zentralbl. f. Chir., 1910, xxxi, No. 31, Beilage, 13.

according to Jackson's[16] method. Plan the incision so that the cicatrix will not be subjected to terminal pressure; if available use skin accustomed to pressure. Remove the periosteum for a distance of 1 cm. above the saw-line; spoon out the medullary canal for a similar distance (Fig. 13). Before dividing inject the large nerve-trunks with 1 per cent. solution of novocain. Draw the nerves well down; make a smooth division. Provide for the muscular balance of the stump by suturing the antagonistic muscles. If important muscular insertions are destroyed, new ones must be provided.

Fig. 12. — Fracture occurring in an atrophic stump following a periosteal amputation of the thigh. The stump was not put to early functional use, atrophy resulted and a light trauma fractured the bone. Weight-bearing has improved under exercises.

After-Treatment.—Put the patient to bed with the leg elevated. As soon as the wound is healed begin Hirsch's medicomechanical treatment. Massage the stump twice daily, and after each treatment rub in a 2 per cent. solution of salicylic acid in olive-oil. At night bathe in a warm sodium carbonate solution. Protect the stump with cotton wool. Place a box at the foot of the bed and have the patient press the stump against it for from five to ten minutes three times a day, then four times, finally every hour. After each treatment energetically flex and extend the hip and knee. Now begin standing exercises. Rest the stump on a bran-bag, at first placing the weight evenly on both legs; later place all the weight on the stump. At the end of two weeks the patient should be able to wear a peg leg (Figs 14 and 15), later a permanent prosthetic appliance which directly receives the weight through the end of the stump.

I do not wish to convey the impression that the Roentgen-ray findings are final, for it is possible to have a perfectly smooth stump which is functionally useless, and on the other hand, a rough bone and a good functional stump. I do believe, however, that 80 per cent. of the painful stumps are due to atrophy and exostoses; in the remaining 20 per cent. the causes will be progressive ostitis, periostitis, neuritis from compression of the nerves, diseases of the vessels and adherent cicatrices. While any of the four methods may yield useful end-bearing stumps, without early functional use any of them may fail.

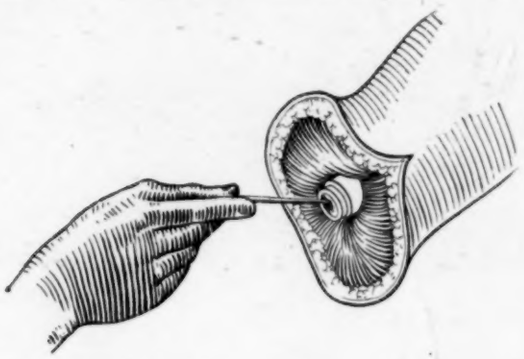

Fig. 13.—Aperiosteal method; spooning out the marrow (after Muller).

CONCLUSIONS

The osteoplastic is the ideal method, but requires ideal conditions; the tendinoplastic is of limited value; the periosteal, although employed by the majority of surgeons of this country, is inferior to the other methods; while the aperiosteal, in the advent of complications in healing, is the only method which is likely to furnish a useful end-bearing stump; it is the simplest, the most universally applicable and the most practicable.

16. Jackson: Surg., Gynec and Obst., 1913, xvi, 432.

ABSTRACT OF DISCUSSION

DR. F. J. COTTON, Boston: This is another nail in the coffin of the periosteum. There was no regeneration without it years ago and I suppose that was the reason why we were always taught to turn back the cuffs on an amputation. It has been a long while since I paid attention to periosteal cuffs. I find stumps get along perfectly well when one does not take that trouble. Of this subject of aperiosteal stump I know nothing from personal experience. I know one obtains a good stump when the periosteum is cut off flush. Spicules of bone should not be in any stump. The osteoplastic operation is not ordinarily applicable when amputating after trauma, nor do most of us feel when operating fairly close to a denuded surface of a mangled limb with the extra chance of sepsis, like introducing bone grafts. So that it comes down to aperiosteal operation or using the periosteal cuff. It seems interesting and sounds as if it were perfectly right. The artificial-leg makers say that they don't care anything about it. I have tried for a stump that would stand an upward pull. For that reason it seemed to me that if the bone end were smooth and if muscle or tendon could be gotten comfortably over a smooth bone surface that is the thing to do. I may be wrong. I hope Dr. Lyle will tell us whether the end-bearing stump is the one wanted. End-bearing function has not been prominent in my mind for recent amputation work. Stumps that make trouble seem to be mainly due to two things, neuromas from carelessness in cutting back the nerves, and cases in which there is too close adhesion of the skin, and too little skin for the bone. These are the cases which seem to make trouble. A minor point is that at least one of the stumps shown was apparently a question of persistent growth as we get it in the stumps in children. I would ask Dr. Lyle whether a stump of this sort, which would seem to be more necessarily close to the skin than the ordinary type, is more or less likely to show that thrusting forward of the bone?

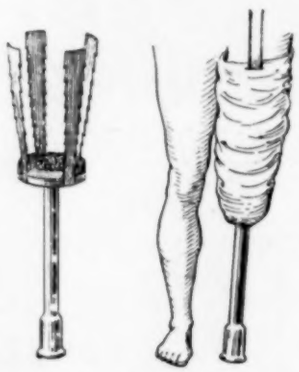

Fig. 14.—Bier's provisional peg leg.

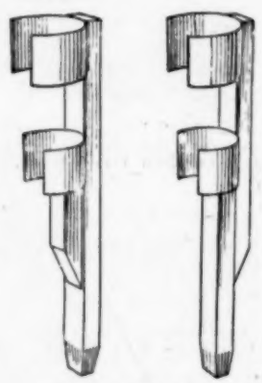

Fig. 15.—Hirsch's provisional peg legs.

DR. HENRY M. LYLE, New York: Regarding the use of the stump and the selection of an artificial limb two cardinal points are to be considered: (1) The stump must be put to early functional use; (2) the limb must be so constructed that the whole weight is transmitted through the stump to the artificial limb. These two principles are at variance with the common practice of advising the patient to wait three months until the stump has shrunken before fitting the limb. It is in these three months of inactivity that atrophy is produced, which condition is further increased by wearing

an artificial leg so constructed that little or no weight is borne on the end of the stump. By developing the stump according to the aperiosteal method these results are avoided. It is extremely difficult to convince an artificial-limb maker that it is possible to obtain a painless end-bearing diaphyseal stump. Investigation of some of the patients they receive to be fitted will explain their point of view. Recently, in examining seventeen cases, considered by instrument makers to be ideal, three only were end-bearing, of these two were Pirogoff's, one a Gritti. There was not one true periosteal amputation through the shaft. Whenever possible I cover the bone with muscle, using Jackson's method; but in the infected cases in which the wound was left to granulate I had successful results when the bone was covered only by skin. I remove 1 cm. of the periosteum and spoon out 1 cm. of the marrow canal. Necrosis of bone following the removal of 1 inch of the periosteum has been reported; the difference between a centimeter and an inch must not be overlooked. After-treatment, exercises and early functional use are as important as the removal of the periosteum. In the production of a conical stump two factors are to be considered; the relatively rapid growth of the bone and the atrophy of the muscles. For these reasons the cineplastic amputation will give the best result, as it produces an active muscular development which tends to maintain the balance of growth between the bone and the soft parts.

SPOROTRICHOSIS IN THE MISSISSIPPI BASIN

RICHARD L. SUTTON, M.D.
KANSAS CITY, MO.

In a recent statistical study Hamburger[1] reviewed the reported instances of sporotrichal infection in man occurring in the United States during the past fifteen years. Of the fifty-eight cases recorded all were of the cutaneous variety, and of the fifty in which the seat of primary infection was stated, the organism gained entrance at some point on the hand or forearm in thirty-eight. The geographic distribution of the cases was of interest. Fifty-four of the patients became infected while residing somewhere in the region comprising the Mississippi River basin. Of the ten cases reported since the publication of Hamburger's first paper, by Newman,[2] Rhamy and Carey,[3] Sutton,[4] Adams,[5] Ravogli,[6] Cooke,[7] Miller,[8] Hamburger,[9] and Wilder and McCullough,[10] nine were from this territory.

Despite the publicity given this disorder by the numerous examples that have been reported, many instances of sporotrichal infection undoubtedly escape recognition. Judging from a rather extensive correspondence with physicians throughout the Middle West, I should say that there are few practitioners of wide clinical experience who have not at some time encountered one or more cases of this disease in their practice. Unfortunately, however, not all of us are in a position to keep closely in touch with current medical literature, and consequently there are many busy practitioners who have never even heard of sporotrichosis. For this reason, I believe that all recognized cases of the affection should be reported, during the next few years at least, in order to disseminate as widely as possible a knowledge of its characteristic symptomatology. In the past eight months I have seen, or been consulted concerning, five new clinical cases. In each instance the history was taken by the physician in charge, and I am indebted to these various gentlemen for the privilege of making a collective report.

Fig. 1 (Case 1).—Showing primary lesion on knuckle, and secondary nodules on wrist and forearm.

CASE REPORTS

CASE 1.—A. R., male, married, aged 24, assistant division superintendent, Metropolitan Street Railway; under the care of Dr. Frank Iuen, Kansas City. Nov. 11, 1913, while inspecting a car, the patient struck his left hand against the edge of a sand-box, and sustained a superficial wound about 2 cm. in length in the region of the second knuckle. The hand was bathed and bound up in a handkerchief, and no further attention was paid to the wound that day. November 13 the wound became inflamed and painful, and on the fourteenth medical advice was sought. At that time the symptoms were those of a mild streptococcic cellulitis. The wound was cleansed, and tincture of iodin freely applied, the patient being advised to keep the hand immersed in hot saline solution for a period of five or six hours each day. Considerable improvement resulted, and it was thought that the lesion would give rise to no further trouble. On November 19,

Fig. 2 (Case 2).—Large ulcer shows location of primary lesion. Cross marks indicate location of abscesses on forearm and arm.

however, a hard, oval lump, about 1.5 cm. in diameter, appeared on the outer surface of the forearm, about 20 cm. below the elbow. The tumor was dark red in color, painless, and lay in, or just beneath, the epidermis. The epitrochlear lymph-nodes were palpable and tender. On the following day it was found that three new tumors had developed, all on the dorsal surface of the left hand and wrist. They were arranged in a linear manner, extending upward toward the elbow. The one nearest the open lesion was reddened and painful, the others were almost duplicates of the tumor that had first developed on the forearm. Two days later the lowermost tumor became fluctuant, and that night it broke

1. Hamburger, Walter W.: Sporotrichosis in Man, THE JOURNAL A. M. A., Nov. 2, 1912, p. 1590.
2. Newman: Western Med. Rev., 1912, p. 646.
3. Rhamy and Carey: Jour. Indiana State Med. Assn., 1913, p. 274.
4. Sutton, Richard L.: The Occasional Clinical Resemblance of Blastomycosis and Syphilis to Sporotrichosis, THE JOURNAL A. M. A., Jan. 11, 1913, p. 115.
5. Adams, G. S.: Another Case of Sporotrichal Infection in Man, THE JOURNAL A. M. A., June 7, 1913, p. 1784.
6. Ravogli: Lancet-Clinic, Aug. 2, 1913.
7. Cooke: Texas Med. Jour., 1913, ix, 190.
8. Miller: Ann. Surg., 1913, lviii, 540.
9. Hamburger: Illinois Med. Jour., 1914, xxx, 99.
10. Wilder, W. H., and McCullough, Clifford P.: Sporotrichosis of the Eye, THE JOURNAL A. M. A., April 11, 1914, p. 1156.

into the primary wound, considerable amounts of brownish-yellow, blood-streaked pus being discharged.

Treatment.—Under the circumstances it was thought best to incise the abscess on the dorsum of the hand in order to provide free drainage. This was done, and dressings moistened with 1 per cent. liquor eresolis compositus applied. November 14, and again November 18, combined bacterin (stock) was given, but without appreciable benefit. Decem-

Fig. 3 (Case 3).—Lesions on inner surface of arm and forearm.

ber 2, the lesions on the forearm having remained practically unchanged, the patient was placed on potassium iodid, the dosage to be gradually increased. All of the nodules had completely disappeared at the end of sixteen days.

CASE 2.—E. A. B., male, grocer's clerk, aged 26; under the care of Dr. French M. Smith, Lyndon, Kan. Early in September, 1913, the patient sustained a slight puncture wound from a pine splinter on the dorsal surface of the left hand,

Fig. 4 (Case 3).—Showing point of inoculation on little finger, and ulcers which resulted from incising abscesses on forearm and arm. About eight months' duration.

near the base of the thumb. He thought nothing of the injury at the time, but about one week later a small ulcer began to develop at the site of the wound. The lesion became quite tender and painful, and considerable amounts of thick, grayish-yellow pus were discharged. The ulcerated area gradually increased in size until it had attained a diameter of 2 or 3 cm. The edges were undermined, and the borders red and congested. September 20 the family physician was consulted. A tentative diagnosis of furunculosis was made, and flaxseed and bread and milk poultices were prescribed. Later, ointments, dusting powders and caustics were applied. About October 15 a hard, indurated nodule appeared on the wrist near the point of infection and slowly increased in size until at the end of a week it was as large as a hazelnut. A tiny fistulous opening developed near the summit of the lesion and discharged viscid, sticky, grayish-yellow pus. In the course of a few days the tumor broke down completely and a small ulcer was formed. After the appearance of this nodule, however, and prior to the occurrence of ulceration, several (seven in all) other nodules appeared on the forearm and upper arm. The patient experienced no inconvenience from the presence of the lesions.

Dr. Smith saw the patient for the first time in December, 1913. The ulcers on the hand were deep and crateriform, with ragged, undermined edges, and were partially covered with yellowish, stringy pus. There were seven large, and numerous small, nodules extending in a chain-like manner from the wrist to the shoulder. The axillary and epitrochlear lymph-nodes were not palpable. The large tumors were dark red in color and hard and resistant to the touch, and were tightly adherent to the overlying skin. A diagnosis of sporotrichosis was made and afterward confirmed by cultures taken from both of the ulcerated lesions. The patient was placed on a saturated solution of potassium iodid, 15 drops, well diluted, after each meal, the amount being gradually increased to 40 drops, t. i. d., then slowly reduced to 20 drops. Locally, a 1:2,000 mercuric chlorid dressing was applied, and renewed morning and evening until the discharge had noticeably decreased, when a dithymol-di-iodid dusting powder was substituted. Recovery was prompt and uneventful.

CASE 3.—J. F. J., male, married, farmer, aged 42. Under the care of Dr. Isaac W. Amerman, Nevada, Mo. Dec. 17, 1913, the patient sustained a slight wound of the dorsal surface of the right little finger. Despite the application of various household remedies the lesion refused to heal, and when Dr. Amerman was first consulted, early in January, a second ulcer had appeared on the adjacent knuckle, and a small nodular mass, the size of a large hazelnut, had developed on the dorsal surface of the hand just below the wrist. During the course of the next twelve weeks numerous other nodules developed on the forearm and arm. The majority became soft and fluctuant within ten days or a fortnight, and were incised, drained and swabbed out with tincture of iodin. In spite of the most rigorous surgical measures, however, new lesions continued to develop. When I first saw the patient, about ten weeks later, the ulcers were still unhealed. The arm was swollen but little, and there was no pain. Owing to the thorough course of treatment the wounds had received, all efforts to secure cultures of the sporothrix resulted in failure. Following a fortnight of treatment with potassium iodid, all of the lesions healed promptly and with comparatively slight scarring.

CASE 4.—W. E. D., male, married, farmer, aged 62. Under the care of Dr. Q. M. Brown, Nevada, Mo. Ten weeks prior

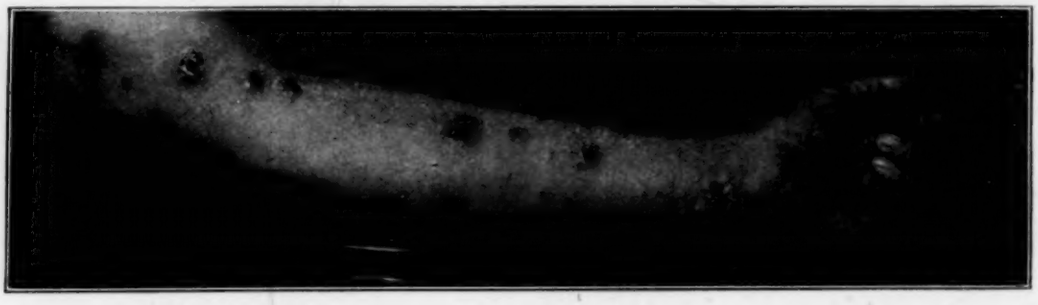

Fig. 5 (Case 4).—Showing character and distribution of lesions, ten weeks after onset of disease.

to the time of consultation the patient first noticed the presence of a small papule on the inner side of his left wrist. There was no history of trauma. In the course of a week the lesion increased in size until it was the diameter of a dime. It then broke down in the center, the resulting ulcer being purplish in color and painless, with a slightly elevated, indurated border. A few days later a small, oval tumor appeared on the anterior surface of the wrist, just above the initial lesion, and this was followed, at intervals of from

three days to a fortnight, by a series of purplish nodules extending in an irregular line from the wrist to the shoulder. The lesions were from 2 to 4 cm. in diameter and firmly imbedded in the skin. After a lesion had existed three or four weeks it would break down in the center, forming a soft, fluctuant tumor, the overlying skin remaining intact. Nine weeks after the onset of the disease the abscesses were opened and drained by the family physician. The epitrochlear and axillary lymph-nodes were not palpable at any time. Probably because of the energetic treatment employed, cultural tests instituted at the end of the tenth week were negative.

CASE 5.—J. B., male, ice-man, aged about 36. Under the care of Dr. Edward Asbell, Kansas City, Kan. Early in September, 1913, this patient, who had just entered the employ of the City Ice Company, reported to Dr. W. A. Wilson, the company's surgeon, for advice concerning an ulcer on his right forefinger. The lesion was a sharply circumscribed one, about 3 cm. in diameter, dark red in color, and only slightly painful. The injured member was thoroughly cleansed and antiseptic dressing applied and the patient instructed to return as necessary for further treatment. Despite the careful employment of modern surgical methods, the wound did not heal, however, and the patient, becoming discouraged, consulted his family physician, Dr. Asbell. During the months of September and October a dozen or more small, sharply circumscribed cutaneous nodules developed on the outer surface of the forearm between the first knuckle and the fold of the elbow. In the course of a fortnight or so these tumors broke down, the resulting abscesses remaining subcutaneous. The cavities were opened, drained and curetted, and iodin and other antiseptics applied. The lesions refused to heal, however, and when I saw the case in April, 1914, both physician and patient stated that there had been little change during the past four months. At that time the case was a medicolegal one, the patient having brought suit against the City Ice Company for damages, and the plaintiff's attorney refused to allow the removal of material for cultural examination.

Fig. 6 (Case 5). — Showing characteristic distribution of lesions. The scaling and discoloration of the surrounding skin is due to the long continued use of antiseptics. (Photograph about eight months after onset of disease.)

CONCLUSIONS

Cutaneous sporotrichosis is a comparatively common disorder in the Middle West. In every suspected case a bacteriologic test should be made as early as possible, otherwise the employment of powerful antiseptics, such as iodin, may render cultural examinations negative even though the fungus is still present. In the majority of instances the symptomatology of the affection is so characteristic that a mistake in diagnosis is hardly possible if one is at all familiar with the disease.

Commerce Building.

The Man Behind the Gun.—Every art is eventually destroyed by the machinery it creates for itself, and medicine is in a like danger. The practitioner by too persistent reliance on his instruments of precision falls into the situation of one who has eyes and sees not, and having ears hears not. He becomes so ignorant of the principles of diagnosis that he will perform a laparotomy to elucidate a simple abdominal condition, or have a Roentgen-ray plate made to disclose what a trained eye would discover for itself. —*Canadian Med. Assn. Jour.*

BILATERAL PERIPHERAL FACIAL PALSY

WITH REPORT OF CASE

TOM BENTLEY THROCKMORTON, B.Sc., M.D.
DES MOINES, IOWA

The occurrence of bilateral facial paralysis, whether of central or peripheral origin, is of sufficient rarity to warrant a due consideration of the subject whenever an opportunity for the study of a case is given. A unilateral facial paralysis is by no means an uncommon condition and results from a lesion involving some part of the facial nervous mechanism between the cortical origin of its cells in the lower third of the motor area of the brain and the ultimate distribution of the facial fibers in the periphery of the human economy. In the central type, in which only the lower quadrant of the face is involved, the lesion is usually due to tumor formation, hemorrhage, degenerative conditions, syphilitic manifestations, etc., whereas any of these factors may also be instrumental in producing a paralysis of the peripheral type, but usually a history of trauma, middle-ear disease, exposure to cold, toxic and infectious conditions, alcoholism, etc., will be obtained.

Bilateral facial palsies, however, are much more rare than are unilateral phenomena and may be caused by any of the factors above mentioned implicating both sides of the facial mechanism. Sometimes they are the result of such a peripheral nerve involvement as may accompany a general multiple neuritis due to toxic substances, such as lead, alcohol, etc. That one may encounter a true Bell's palsy which simultaneously, or almost simultaneously, affects the two sides is also possible, but the rarity of localized lesions involving only the seventh pair of cranial nerves seems evident from the frugal statements bearing on the subject, found in recognized neurologic works and literature. That lesions simultaneously involving some portion of the peripheral distribution of the facial nerves do occur is evident from the following case report.

REPORT OF CASE

An unmarried white man, aged 34, native of Iowa, a singing evangelist, consulted me Jan. 7, 1914, for bilateral facial paralysis. The onset of the paralysis had been sudden and the duration had extended over a period of some seven months.

Family History.—On the paternal side, nothing of direct bearing on the case could be elicited from the history. His maternal grandfather, however, at the age of 50 sustained a unilateral facial paralysis (Bell's type), and the patient's mother at 65 suffered from a similar condition for a period of some three months. No definite cause could be ascertained for the onset of the paralysis in either case but recovery ensued in both instances.

Personal History.—Patient as a rule had always enjoyed good health and had never had any serious illness or affliction until the onset of present trouble. Had measles at the age of 16 without sequelae, one attack of "grip" eleven years ago and another attack about four years ago, from which good recoveries were made. Has had three attacks of what he termed "rheumatism" in which the muscles about one shoulder were involved. The attacks lasted about a day but there were no inflammatory changes, joint involvement or other untoward phenomena. For the last ten or twelve years he has been more or less constipated. Does not use tea, coffee, narcotics or alcohol.

Present Illness.—May 24, 1913, while engaged in church work in Wisconsin, he was taken with an attack of the "grip." He stated that he felt quite ill, fever rose above

104 F., he had several chills, headache, and in a few hours had general aches and pains. On the third day the temperature reached normal, headache and general aches subsided and although he felt weak, he returned to his work and conducted a musical rehearsal. On the evening of the fourth day he became quite heated following the physical exertion of conducting a large chorus choir. The weather was warm and humid and he occupied a seat near a window which was lowered from the top, exposing the back of his head and neck to a draft.

Two or three days later, while at the breakfast table, he noticed that his cheeks felt rather strange to the touch and that they had a tendency to droop. Food, which he says tasted normal, collected between the cheeks and the teeth, and necessitated the cheeks being pushed inward in order to clear away the particles. On examining his face in the mirror, he found that both sides were completely and absolutely paralyzed. There was total inability to wrinkle the forehead, elevate the eyebrows, close the eyes, dilate the nostrils, move the ears, or to move any of the muscles of expression. He then recalled that one or two evenings before the onset of the paralysis he had suffered from pains in the region of the angles of the jaws and that gradually the pains had radiated backward behind the ears. Following the paralysis, the pain became exceedingly severe at times, so much so that a hypodermatic injection was given by the attending physician to alleviate the suffering. Paroxysmal pains radiated over the scalp posteriorly and gradually became more or less localized in the median line of the neck a little below the external occipital protuberance. He does not recall having any tinnitis, pain in the ears, or increased or decreased sensitiveness to low or high-pitched sounds. No herpes developed about the ears. He was confined to his bed at irregular intervals during the week following the onset of the paralysis but was obliged to remain quiet for a period of some three weeks following, owing to weakness.

There was no return of motion to any of the affected muscles until ten weeks after the paralysis, when a very slight elevation of the outer angle of the right eyebrow could be accomplished. Two weeks later there was a little return of power to some of the oral muscles, so that the corners of the mouth could be retracted very slightly. Very gradually there was a little return of power to the facial muscles, but the first marked return of motion in the occipitofrontalis was not until between five and six months after the paralytic onset and was then noticed on the right side only. For a long time the salivary flow was greatly diminished, but of late this condition has improved. The sense of taste was never lost but apparently there must have been some diminution, for the patient was obliged to season his food with far greater quantities of salt than he formerly was accustomed to do.

Apparently the treatment instituted consisted largely of anodynes, measures to relieve the local congestion, and nerve tonics. During the following September, the patient began using, of his own accord, the faradic current and the statement was made that at times it seemed to make some of the muscles contract. Galvanism was never used.

Examination.—Inspection of the face, when no voluntary effort at contraction of the facial muscles is made, does not reveal any special change or defect. There is an absence of any transverse lines or wrinkles across the forehead and the nasolabial lines are considerably erased, yet apparently equally so. The moment that voluntary effort is made to move the muscles, however, the bilateral palsied condition of the face at once becomes markedly apparent. The paralysis is more noticeable on the left side, there being a trifle more ability to elevate the outer angle of the right eyebrow, and on marked effort the right corner of the mouth can be retracted more than is possible on the left side. The movements, however, are greatly limited, considering the range of normal muscular action.

Fig. 1.—Showing expression of patient when facial muscles are at rest.

Fig. 2.—Maximum voluntary movement on effort to elevate eyebrows.

The eyes can be opened and closed at will, but any attempt to close them tightly meets with ill success. All efforts at talking or laughing brings out the inequality between the palsied sides, and attempts to whistle, purse the lips, wrinkle the forehead, expose the teeth, etc., are unavailing. Speech is not interfered with so far as linguals are concerned, but there is a very noticeable defect in the enunciation of words and letters in which labial sounds play an important part. There is hardly a perceptible movement of the lips during the act of talking.

The tongue protrudes in the median line, is covered equally with a whitish fur and its lateral margins are somewhat fissured. Sensation is preserved, but various tests with acid, sweet, bitter and salty materials indicate a possible diminution of the sense of taste, particularly in the anterior two-thirds of the organ. The sense of smell is preserved, vision and range of ocular movements are normal, ptosis, diplopia, nystagmus, hemianopsia and abnormal pupillary phenomena, are absent. The masseter groups are firm and contract equally, and no disturbance of sensation in the distribution of the trigeminals could be elicited. Hearing is retained and about equally so, and no abnormal findings indicative of the involvement of the ninth, tenth, eleventh or twelfth pairs of cranial nerves can be found. The uvula hangs in the median line, and the soft palate contracts equally when "ah" is sounded. Station and gait are normal and the deep reflexes of the extremities are all preserved.

As may well be expected in a case in which improvement has been gradually taking place, the electrical changes are not typical of a complete peripheral nerve degeneration. The response to faradism and galvanism are about equal on the left side, while on the right side faradism produces a little more pronounced contracture than does galvanism when the motor points are stimulated.

That the case is one in which the peripheral branches of the seventh pair of cranial nerves were simultaneously involved, needs, I feel, no special comment. That the process extended upward in the Fallopian canals as high as the points where the chordi tympani branches are given off, is evident from the diminished taste sensation and salivary secretion.

The absence of hyperacusis or painful sensitiveness to musical notes of low pitch, as well as lack of evidence of pain or a herpetic eruption involving the auricles and external auditory canals, shows that the process did not extend to the nerve supplying the stapedius, or to the geniculate ganglion. The etiologic factor or factors, however, that may have been responsible for the bringing about of the bilateral facial paralysis, is not only a question of considerable interest but perhaps of some speculation as well. The too sudden cooling off in a draft following the marked physical exertion incident to conducting a large chorus, would give, of itself, in the absence of other possible causes, a goodly and sufficient reason for believing it to be the direct cause. This becomes all the more apparent when we realize that in a large number of cases (73 per cent. according to Oppenheim) in hitherto healthy individuals, this condition has been known to follow as a direct consequence of a chill, a draft, washing the head, sleeping with open windows, etc. The question, however, as to the possibility of an infectious or toxic origin due to an influenza infection

Fig. 3.—Maximum voluntary movement on effort to close the eyes tightly and to retract the corners of mouth.

Fig. 4.—Facial expression of patient during laughter.

is not to be wholly ignored. Paralysis of the facial nerve has been known to follow such diseases as diphtheria, and mumps, and, as pointed out by Oppenheim, "a facial paralysis and an otitis may be produced simultaneously by the same cause, chill, infective disease (influenza, typhoid, etc.)" It is by no means difficult to understand the modus operandi in those cases in which parotitis is present, or for that matter where an otitis exists. That there is direct involvement, in such instances, of the facial nerve at some place along its course in the bony canal or after its exit from the same, by an inflammatory process or resultant edema is, I am sure, perfectly obvious. In this case, if an influenza infection played any rôle as an exciting agent, it would appear to be in the absence of any associated otitic involvement. That the paralysis may have resulted from a combination of an infectious process and chilling is, it is needless to state, well within the realm of possibilities. The occurrence of a facial palsy of the peripheral type, however, in members of three generations of direct descendents, may be worthy of more than a passing glance. Philip believes that a congenital narrowing of the stylomastoid foramen in certain persons predisposes them to a compression of the nerve on any slight congestion of its trunk. Such a theory is not only in harmony with facts incident to the case under consideration, but may also give a clew as to why one attack of facial palsy predisposes to another, and why, in a certain percentage of cases (7 per cent. according to Starr) there is a recurrence of the disease.

CONCLUSIONS

From the foregoing statements I feel that the following conclusions may be justified:

1. Bilateral facial paralysis is much more rare than is the unilateral type.

2. While exposure to cold, drafts, localized congestive conditions, infectious and toxic processes, etc., seem to be largely responsible as direct agents in the production of the peripheral type of facial paralysis, the relationship between the nerve-trunk and its bony canal (Fallopian aqueduct) may not be altogether a negligible factor.

3. Congenital narrowing or stenosis of the Fallopian aqueduct may be more instrumental as a true basic causal factor in the production of peripheral facial palsy than is commonly believed.

4. Hereditary predisposition to peripheral facial paralysis may be present in some individuals.

407 Equitable Bldg.

PELLAGRA IN MINNESOTA

DEANE R. BRENGLE, M.D.

ST. PAUL

REPORT OF CASE

Up to the present time four cases of pellagra have been reported to the Minnesota State Board of Health, a man and three women.

The first case was that of a man aged 53, a resident of Olmstead County. His former residence was North Dakota. He died at his home in Olmstead County of undoubted pellagra, June 4, 1913, after an illness of three years.

The second case was that of a woman, a resident of McLeod County. Death occurred at the University Hospital, Minneapolis.

The third patient was a woman, aged 45. Residence and place of death was Minneapolis. Duration of illness was two years. She died April 21, 1914.

The fourth patient, a woman aged 55 residing at Rochester, died in June, 1914. This case terminated fatally in less than two years following the first symptoms.

The discovery of at least three of the reported cases in the most important medical centers in this part of the Northwest is significant: It is a matter of common observation that the best diagnosticians live in the cities and larger towns, and their opportunity for knowing the possible extent of pellagra in the rural districts is limited. Certainly the reported cases are not a true index to the number actually existing in the commonwealth. How many pellagrins the physicians

of the smaller towns have overlooked, we can only surmise. Especially is a mistake apt to occur in that type of the disease lacking definite cutaneous manifestations, designated by Roussel as pellagra sine pellagra. Such a case has recently been reported by Frazer[1] of Asheville, N. C. Following is a report of a case which recently came under observation in St. Paul:

History.—W. Y., man, aged 35, Cuban, laborer, entered the St. Paul City and County Hospital, June 17, 1914. He sought admission because of a dermatitis of the face and hands which was accompanied by an intense itching and burning. He also complained of headache of several weeks' duration, pain in the back and shoulders, and vague digestive disturbances. He was despondent to a degree that had assumed suicidal tendencies. General malaise was marked. The skin symptoms had existed for three weeks previous to admission—the headache and gastro-intestinal symptoms for a somewhat longer period.

Patient with pellagra.

I was on contagious service at the time and was called on to admit the case as one of a possible erysipelas. At once I was impressed by the characteristic symmetry of the skin lesions and strongly suspected the probability of their pellagrous nature.

The patient gives the following history: He is a native of Cuba, but has resided in the United States since the age of 4 years. He has traveled extensively; worked in many states of the Union, but has been very little in the extreme southern sections of the country. Much of his time has been spent in railroad and construction camps. He recalls distinctly having seen at least one case similar to his own, among his fellow laborers. He states that for several years he has eaten excessively of cornbread and that the meal often became moldy from being kept in the damp store-car. This statement was unsolicited and is mentioned without regard to its possible bearing on etiology, which is not within the province of this article. His habits have not differed materially from those of his associates. He smokes excessively, uses alcohol immoderately, and is addicted to periodic venery. He denies luetic infection. With the exception of chancroid, a possible lead poisoning ten years ago, and one attack similar to his present malady, coming on at the same time last year, he has never been sick.

Such family history as he can give is without significance: Father died of "a fever." Mother of pneumonia. Beyond these simple facts he is uninformed.

Physical Examination.—Adult male, fairly well nourished; height 6 feet 1 inch; weight 165 pounds. The face and neck, dorsal surface of the hands and upper one-third of forearms are covered with a diffuse dermatitis in which coin- and wreath-shaped figures are prominent. The distribution is characteristic and pathognomonic. On the hands only the dorsi are affected, and the extent on the wrists corresponds to the weather-tanned areas. The line of demarcation is definite and pronounced, giving the hand a glove-like appearance. The lesions are most marked and extend farther around on the radial than on the ulnar side. The terminal phalanges are uninvolved, as are also the contiguous portions of the digits. The elbows are slightly but distinctly involved. The entire affected surface presents a uniformly deep red, or reddish purple color, on which the mottlings stand out prominently. The skin is thick and hypertrophic—tense and hard to touch.

On the face the erythema is of a deeper hue and there is some edema which has increased since admission. There is evidence of extensive epidermal exfoliation, the scales being much larger than those on the hands. Pustulation almost approaching furunculosis has occurred on the forehead and cheeks, accentuated undoubtedly by a preexisting acne. The ears are markedly excoriated and fissured. On the face, as on the hands, the eruption is definitely confined to the sun-exposed areas; anteriorly a narrow zone of healthy skin separates the dermatitis from the hair line.

Eyes: There is a ptosis of left lid and a bilateral drooping of the superciliary folds. The right pupil is dilated. Pupils react to light and accommodation.

Chest and Abdomen: Lung boundaries are normal. Both lungs are emphysematous. There are no areas of dulness.

Cardiac dulness is increased from side to side. Apex beat is not palpable. Pulse was 65 on admission; it continued unchanged for the first week, and then increased to 70.

Area of splenic dulness is decreased.

Superficial glandular enlargement is limited to the epitrochlears, which are enlarged to such an extent as to be plainly visible on inspection. I have never seen this finding referred to in the literature and would be glad to know if any one has made similar observation.

Gastro-Intestinal: Anorexia is a prominent symptom. Constipation predominates but alternates with diarrhea. There is some pyrosis and flatulence. There are no ventral or dorsal foci of tenderness over region of the stomach.

Nervous System: Static sense is markedly impaired (positive Rombergism). The deep reflexes are greatly exaggerated. Cutaneous sensibility over inguinal region and extensor surface of thighs is decreased. There are no areas of anesthesia or hyperesthesia. There is no Babinski or Oppenheim. Over the upper dorsal vertebrae there are marked pain and tenderness. Headache is at times intense and is accompanied by great lassitude and mental depression, almost amounting to a phobia.

Patient is well orientated and intellect seems unimpaired, but he is apathetic and shows marked mental abstraction. The simplest questions are answered with apparent effort and only after prolonged hesitation.

Laboratory Findings.—The laboratory examination conducted by Dr. M. Barron, Pathologist of the Medical Department of the University of Minnesota is as follows:

Blood: Hemoglobins, 0.75; erythrocytes, 4,700,000; leukocytes, 7,200. Differential: Polymorphonuclears, 61 per cent.; lymphocytes, 26; large mononuclears, 8; transitionals, 3;

1. Frazer, Thompson: Report of a Case of Pellagra with Late Skin Lesions, THE JOURNAL A. M. A., June 20, 1914, p. 1964.

eosinophils and basophils, 1 per cent. of each. Two Wassermanns taken one week apart were negative.

Urinalysis: Examination was made particularly for indican, and the reaction (Obermayer's method) showed it to be present in great quantity. There were no albumin or casts, and no sugar.

Unfortunately gastric analysis was not done until the disease had begun to improve under treatment. Ewald's test meal was given and removed in an hour. The quantity was about 25 c.c. Free hydrochloric acid 26. Total acidity 61. Occult blood ++. No lactic acid was present. No tests for ferments was made.

Subsequent History.—The case has attracted a great deal of attention and has been seen and examined by many physicians of St. Paul and Minneapolis and by other medical men, prominent in the Northwest. At no time has the diagnosis been seriously questioned. The triad of cutaneous, gastro-intestinal and nervous symptoms are plainly evident, even on cursory examination.

The patient has now been in the hospital and under constant observation for a period of over seven weeks. During this time he has received a nourishing diet, and all forms of exertion have been interdicted. Medicinally he has received Fowler's solution, begining with 5 drops, and increasing to 20, three times a day. In his general condition marked improvement has occurred. The skin symptoms have ameliorated; in fact, the facial eruption has almost entirely disappeared, leaving a surface of peculiar dark-red color. His mental state has also improved. At first he paid little heed to his surroundings unless solicited to do so, and was inclined to resent attention of any sort. He has now become more communicative and cheerful, takes an interest in all proceedings affecting him and is an exceedingly well-behaved person. His present attitude is one of distinct euphoria, and he is subject to outbursts of senseless laughter. He still complains of insomnia, but his former intense cephalalgia has receded. At first scarcely able to move about, he now assists in the general work around the ward. Certainly all has been accomplished that could be expected of any line of treatment in so short a time.

City and County Hospital.

PEMPHIGOID OF THE NEW-BORN (PEMPHIGUS NEONATORUM)

WITH REPORT OF AN EPIDEMIC *

HAROLD NEWTON COLE, PH.B., M.D.
AND
H. O. RUH, A.B., M.D.
CLEVELAND

Pemphigus neonatorum, or, as Jadassohn[1] more aptly terms it, "pemphigoid of the new-born" or "infantile pemphigoid," was first described as an independent disease in 1773 by Ochene.[2] Previous to this time it had been confounded with syphilis, and even up to the end of the last century there were many who considered it syphilitic in origin.

A number of epidemics of this disease have been reported by different men, for example, Rigby[3] in 1834 described several mothers in a London obstetric house who were affected from their infants, and he himself contracted the disease while performing a necropsy on one of the infants. Brocq[2] thinks that in 1850 Lasegue and Trousseau[4] without a doubt described an epidemic of this disease from the Necker Hospital under the name of "Varicelle Pemphigoid." Following this, epidemics were reported by Hervieux, Olshausen and Mekus, Klemm, Koch and others.[2] Moldenhauer in 1874[5] reported an epidemic of ninety-four cases from the Leipsic clinic, and E. Vidal[6] the following year studied about fifty cases at the clinic of Saint Louis Hospital.

After all these careful observations no more doubt was held as to the contagious and epidemic character of the disease, and the later reports and researches have only tended to clear up some of the mooted questions as well as to prove or disprove the relationship of the disease to some of the allied affections. Since 1875 the question has been studied quite thoroughly by many men; a number of epidemics have been reported; but as these have been very carefully reviewed by several others we would refer those interested to the able articles with bibliographies of Brocq,[2] Carlton,[7] Foerster,[8] Della Favera[9] and others that will be mentioned later. Nevertheless, in spite of the seemingly simple character of the clinical picture, to use the words of Hofmann,[10] "there are still some points about the disease as yet not satisfactorily settled," for example, its etiologic agent, its relation to impetigo contagiosa seu vulgaris, and to Ritter von Rittershain's dermatitis exfoliativa neonatorum.

During the past year we had the opportunity of studying an epidemic of this disease in Maternity Hospital. The case histories will be given here in brief,† after which we will discuss the problems which they present.

REPORT OF CASES

CASE 1.—Baby B., aged 11 days, with negative family history was seen April 27, 1913. Child was delivered with instruments and six days after birth had a few vesicles, which appeared first on the face. They kept increasing in size and number, breaking shortly after being formed. Baby had no rise of temperature and had been increasing daily in weight. As there seemed to be no improvement one of us was called in consultation.

As examination showed nothing abnormal internally the skin condition will be described.

Around the mouth, in the right axillary space and around the buttocks there were found numerous large and small vesicles, varying in size from a split pea to a half-dollar or a little larger. In places they had coalesced and broken and a very little serum ran out leaving a reddened derma with a slight bleeding on the floor of the lesions. With the exception of a slight vesicle on the right palm, both palms and soles of feet were free from lesions.

Gelatin baths and emollients were ordered for the baby but two days later he was worse, a large part of the face and buttocks being involved. Cultures were made from several intact vesicles on agar-agar, three tubes being used to each culture, made with a sharply pointed platinum needle which was inserted as carefully as possible into the base of an intact vesicle and then three smears made on each of the tubes in succession. Locally, ammoniated mercury ointment was ordered.

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* From the Department of Dermatology and Syphilis and from the Department of Pediatrics of Western Reserve University.

* Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Jadassohn, J.: Ueber Pyodermien, die Infektionen der Haut mit den Banalen Eiterregern, Halle, a S., Carl Marhold, 1912.
2. Brocq: La pratique dermatologique, Paris, Masson et Cie, 1902, iii, 829. Quotes Ochene, Hervieux et al.
3. Rigby: London Med. Gaz., 1833, xvii, 125.
4. Lasegue and Trousseau: Gaz. méd. de Paris, 1850, 478. Quoted by Brocq.
5. Moldenhauer: Arch. f. Gynäk., 1874, vi, 369.
6. Roeser: Du pemphigus chez les nouveau-nés. Thèse de Paris, 1876.
7. Carlton, E. P.: New York Med. Jour., 1907, lxxxvi, 573.
8. Foerster, O. H.: Pemphigus Neonatorum, or Bullous Impetigo Contagiosa of the New-Born, JOURNAL A. M. A., July 31, 1909, p. 358.
9. Della Favera: Arch. f. Dermat. u. Syph., 1909, xcviii, 231.
10. Hofmann, L.: Arch. f. Dermat. u. Syph., 1913, cxviii, 245.
11. Ritter von Rittershain: Centr.-ztg. f. Kinderh., October, 1878.

† Case histories and histologic studies will be described more in detail in the reprints.

Forty-eight hours later a spot on the forehead inoculated from one of the intact vesicles showed a small vesicle while all cultures taken showed a pure staphylococcus growth. As the child grew steadily worse an autogenous vaccine was prepared.

May 3, 1913: Child much worse. The entire epidermis is more or less scaly and red. The vesicle formation has spread over the entire face and down over the chest and into the axillary spaces, and over the groins and buttocks, while the epidermis of the hands and feet is raised like

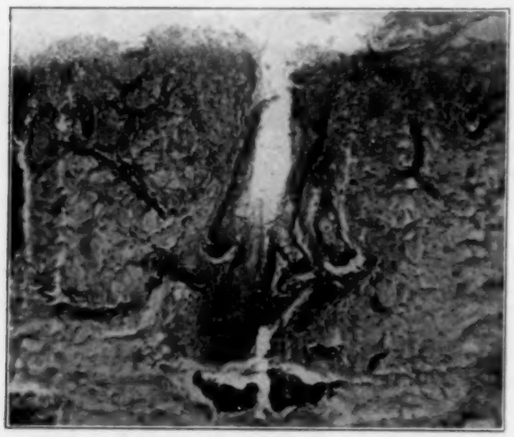

Fig. 1.—Extreme loss of epidermis with a few epidermal cells imperfectly attached on the right. The necrotic process has extended down into the hair follicles and even into the sebaceous glands. Marked cellular infiltration and edema. Eosin and hematoxylin stain.

gloves. The skin peels off in large strips, leaving a moistened, slightly bleeding derma. The child's temperature is high and he is taking practically no nourishment and is very restless. As the autogenous vaccine was not ready the patient was given 5,000,000 of a stock staphylococcus vaccine.

May 4, 1913: Babe died during the night.

Necropsy Findings.—At necropsy the skin changes were much the same as already described but almost universal in extent. No true ulcerations were noted. No gross pathologic changes of the internal organs were noted. On microscopic examination the cells of the heart, liver and kidneys all showed an extreme grade of cloudy swelling while the liver and kidneys were markedly congested. Moreover, in the veins of the liver and lungs numerous emboli, made up of agglutinated cocci were found by the Gram-Weigert stain.

Skin: In many areas the epidermis is lost and when present consists of only a few layers of cells. There is an imperfect cornification, even the uppermost layers of cells still retaining their nuclei; while there is no stratum lucidum or granulosum. Above the epidermis, or rather its remnants, there is generally found a thick crust made up of fibrin, broken-down cells, and large clumps of cocci as shown in Figure 4. The epidermis is very edematous and infiltrated with numerous polymorphonuclear leukocytes and erythrocytes. In many places however, it is entirely lost, as shown in Figure 1, and there is a denuded necrotic derma markedly infiltrated with serum, erythrocytes, leukocytes and cocci. This process is especially marked along the course of the hair follicles (Fig. 1) where in some instances it was possible to find inflammatory and necrotic changes with bacterial invasion down to the root of the hair. The deeper vessels are all much engorged and surrounded by leukocytic infiltration, while the edematous tissues of the corium, as is usual in such cases, take the stain rather poorly.

Case 2.—Baby M., seen May 12, 1913, was first noted on the eighth day after birth as having a small vesicle on the face. Later several more formed and a large pustule started below the right eye. The child was given 0.2 c.c. (about 5,000,000) of the autogenous vaccine prepared for Patient 1. There were no intact vesicles from which to make cultures. The baby showed immediate improvement and three days later was given a second injection and two days later a third, and was discharged May 20.

Case 3.—Baby M., aged 7 days, seen May 20, 1914, first developed a vesicle near the right corner of the mouth and later several started on the chest and in the axillae and groins. Babe was well otherwise and gained regularly. It was given some of the vaccine prepared for Patient 1, dose being repeated twice and the baby was discharged May 24. Cultures in this case by Lewandowsky's method showed a pure *Staphylococcus aureus.*

Case 4.—Baby B., aged 12 days, was seen May 14, 1914. Three days before a small vesicle started at the right side of the neck which tended to spread and one of us was called in. At the time of the examination several spots of folliculitis were noted around the eyes, the infection having apparently involved the follicles of the eyelashes. On the neck and lower left chin there were several vesicles, one or two of which had already ruptured. Along the right side there was a long irregular-shaped lesion (8 by 5 cm.) showing a large broken bulla with wrinkled epidermis and a moist reddened floor. The armpits were also involved, while the left hand showed complete loss of the epidermis from the wrist down, leaving a moist red uncovered derma showing here and there slight bleeding puncta. The baby had no elevation of temperature and seemed well and was gaining regularly in weight. Cultures were taken from several intact vesicles. In this case likewise, the vaccine was used and the improvement was remarkable after one injection, while after two more the baby was practically well.

Case 5.—Baby H., aged about 5 days, seen May 14, 1913, had several vesicles on the neck, and the skin around a fresh circumcision wound on the penis was markedly involved, likewise the axillae. Cultures made by Lewandowsky's method showed pure *Staphylococcus aureus.* In this case all the lesions but the one on the penis healed readily after use of the vaccine but the open wound healed rather slowly.

Case 6.—Baby E., aged 6 days, had merely a few vesicles on the side of the face and neck which reacted immediately to the vaccine.

Cases 7 and 8.—These two infants, not seen by us, had only one or two vesicles and were immediately removed to

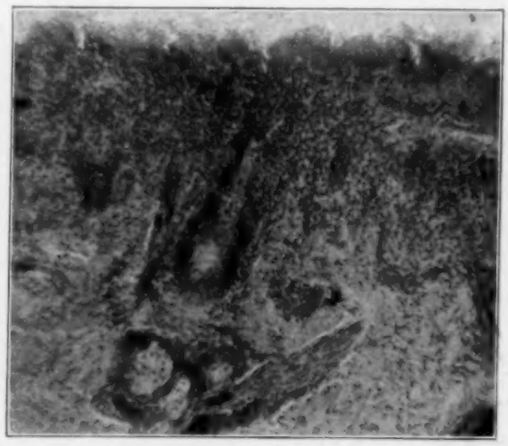

Fig. 2.—Marked exfoliation of epidermis with intense cellular infiltration. Thick crust over the epidermis made up of necrotic cells and clumps of bacteria. Van Gieson's stain (Weigert's modification).

their homes and tincture of iodin applied locally with good results (questionable).

Case 9.—In addition, another child, aged 3 weeks developed a crusted lesion on the cheek after leaving the hospital. This did not react to ammoniated mercury, but cleared up quickly after use of the vaccine.

SUMMARY OF EPIDEMIC

In a series of eight or possibly nine cases of infantile pemphigoid the *Staphylococcus aureus* was cultivated

in pure culture in all cases in which unbroken vesicles could be found. In the first case a bacteriemia developed, resulting in death on the twelfth day of the disease. In the other cases the use of an autogenous vaccine seemed to give prompt results when other measures failed. The infections were apparently carried from one to another and despite strict isolation precautions and fumigation of separate rooms, the epidemic became so extensive that it was necessary to

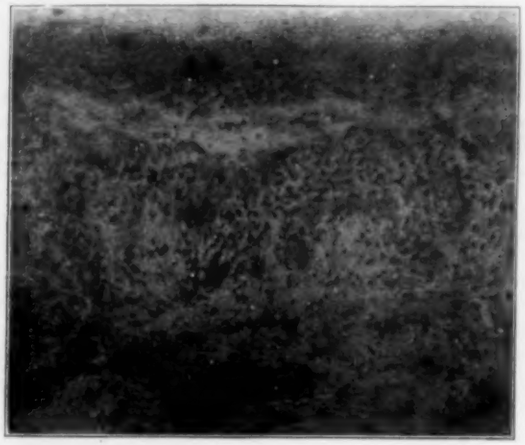

Fig. 3.—Process much like that in Figure 2 but with a higher magnification. Marked dilatation of the vessels. Clumps of bacteria in the crust covering the exfoliating epidermis. Eosin and hematoxylin stain.

close the institution for a thorough disinfection. Only after the disinfection of the entire institution did no new cases develop.

Pemphigoid is a disease found all over the world, cases having been reported from Asia, Japan, Europe, North and South America. Season apparently has little effect on its prevalence. The sexes are about equally affected. It generally appears from about the fourth to ninth day after birth and is, through contagion, comparatively often seen up to the age of 3. After the age of 6 the skin is not so susceptible, though it is occasionally seen in adults who contract it from the infants or children, for example, nurses contract it on their fingers, mothers on their mammae, etc. The disease in its epidemic form attacks the strong, normal infants as well as the weaklings.

There has been much discussion concerning the etiologic agent in the disease. Kaposi believed that it was simply an increased physiologic exfoliation taking place after birth, and others of the older writers mentioned mycoses, while Vargas[12] in his cases thought that toxins were to blame. The following authors found the staphylococcus in the skin lesions in a number of cases: Lewandowsky,[13] Engman,[14] Call,[15] MacGuire,[16] Schwartz[17] and Köhler.[18] Della Favera and Hofman not only found the staphylococcus in the vesicles, but also in the blood. Almquist[19] in 1890 studied an epidemic in the Maternity Hospital in Gottenborg. Despite all attempts at disinfection and isolation the epidemic lasted six months, and 134 of the 216 children were attacked and four died. Several of the mothers were also affected with lesions on the breasts. He regularly isolated an organism much like a *Staphylococcus aureus* with which he inoculated himself and produced vesicles. He considered, however, that the organism, on account of cultural characteristics, should be differentiated from the staphylococcus. Clegg and Wherry[20] have isolated a diplococcus much like Almquist's organism, which they term *Micrococcus pemphigi contagiosi*. They state that it was found by them in all of the five cases investigated at the Manila, P. I., Civil Hospital. Moreover, they state that practically every child in this hospital has pemphigus neonatorum. Manson[21] has also found a diplococcus, while Holt[22] in one case found the staphylococcus, streptococcus and *Bacillus lactis aerogenes* at necropsy. Foerster asserts that there is no one causative organism, while Bloch[23] in a carefully studied series of fifteen cases from Baginsky's clinic found in the eight coming to necropsy pure cultures of the streptococcus in the blood and the staphylococcus in the skin lesions. He thought that in all of them there was a mixed infection and that the streptococci worked the deleterious influence. The majority of the writers, however, feel that the staphylococcus bears an etiologic relationship to the disease. We shall discuss the variability in the findings more fully at a later point in this paper. As in our case, it is often a difficult matter to find the source of contagion. In one of Hofmann's cases it was from a case of impetigo Bockhart, a disease known to be due to the staphylococcus. In one case reported there was an infected vaginal tear. The midwife has frequently been the guilty carrier of the disease from one case to another; thus Corlett's[24] two cases occurred in the practice of one midwife. Maguire's[16] eighteen cases with one exception, and Jukovsky's[25] twelve cases

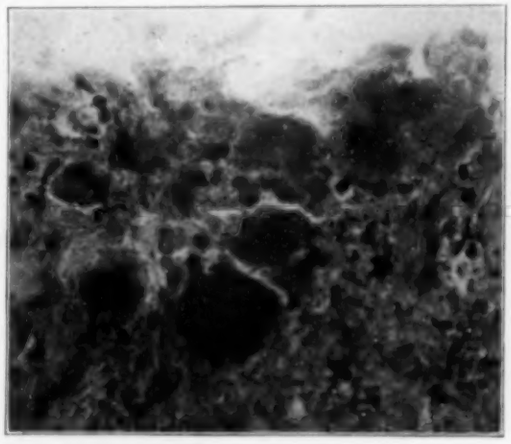

Fig. 4.—Epidermis showing edema and cellular infiltration with large dark masses of agglutinated cocci. Eosin and hematoxylin stain.

could likewise be traced to one midwife. Nurses, on account of carelessness in technic, have also been reported as carrying the disease from one child to another. Thus in Bumm's clinic at the Berlin Charité

12. Vargas, A. N.: Festschr. for Abraham Jacobi, New York, 1890, p. 363.
13. Lewandowsky, F.: Arch. f. Dermat. u. Syph., 1909, xciv, 163.
14. Engman, M. F.: Jour. Cutan. Dis., 1901, xix, 180.
15. Call, Emma L.: Am. Jour. Obst., 1904, i, 473.
16. MacGuire: Brit. Jour. Derm., 1903, xv, 427.
17. Schwartz, H. J.: Bull. Lying-in-Hosp., New York, 1908, v, 1.
18. Köhler, F.: Deutsch. Arch. f. klin. Med., 1899, lxii, 579.
19. Almquist, E.: Ztschr. f. Hyg. u. Infectionskrankh., 1891, x, 253.
20. Clegg and Wherry: Jour. Infect. Dis., 1906, iii, 165.
21. Manson, P.: Tropical Diseases, London, Cassell and Company, 1900, p. 611.
22. Holt, L. E.: New York Med. Jour., 1898, lxvii, 175.
23. Bloch, W.: Arch. f. Kinderh., 1900, xxviii, 61.
24. Corlett, W. T.: Am. Jour. Med. Sc., 1894, n. s., cvii, 413.
25. Jukovsky: Trudi Obsh. S. Peterb. detsk. vrach., 1901, vi, 31.

there were nine cases in which it was possible to trace the disease from the first child by means of a nurse to other nurses and to the children. Zechmeister[26] in eleven months saw twenty-eight out of seventy-six children infected, that is, 37 per cent. Nearly all of these cases were due to one midwife, while the others had no trouble. Some older children who came into contact with the patients were also infected. Brosin[27] reports two such epidemics traceable to midwives in which there were eighteen cases in sixty-four confinements. When an epidemic is once started, it is often exceedingly difficult to trace the starting-point of new cases, for even in such well-organized clinics as the Charité it was finally necessary to empty the rooms and disinfect them one by one. Such was also the case in the epidemic here reported and also in Almquist's and Call's epidemics. In the latter, 27 per cent. of the infants were infected despite the strictest isolation precautions. Probably the infection takes place through any open lesion on the skin, even the slightest scratch. Many of them no doubt take place through the intact mucous membranes; hence the tendency for the lesions to appear first around the mouth. It is noteworthy that in all of Maguire's fatal cases the umbilicus became infected, secondary to the skin infections, and it is quite probable that this is one of the main avenues by which the bacteriemia develops.

The necropsy findings in fatal cases are those of any infection or bacteriemia: parenchymatous degeneration of the liver, kidneys, pancreas and heart; inflammatory changes in the gastro-intestinal tract varying from a simple catarrhal and follicular inflammation to true ulcerative processes. In the cases in which a bacteriemia exists, bacterial and agglutinative thrombi are frequently found. Throughout the tissues in such cases, by proper staining methods, clumps of organisms can be found. There is some difference of opinion as to the histologic changes produced in the skin. It is sufficient to state here that the most characteristic changes are dilatation of the papillary vessels with edema and cellular infiltration, followed later by an edema of the epidermis and vesicle formation. In a progressive lesion the deeper vessels become involved, with extensive edema of the deeper tissues. The changes in the epidermis are dependent on the underlying tissues, and the desquamation is in proportion to the intensity of the exudation and of the infection.

Experimentally, several workers have been successful in producing the lesions by inoculations. Almquist inoculated himself with the coccus, which he isolated from his epidemic in Gottenborg, and there was produced vesicle formation, but no general infection. Landsteiner, Levaditi and Prasek[28] isolated a coccus from an infant dying with infantile pemphigoid and for several generations inoculated it into chimpanzees (five with pemphigoid lesions). They found that the virus was not filtrable. They also inoculated themselves and succeeded in producing vesicle formation, but they were not reinoculable or autoinoculable. Their histologic findings were similar to those mentioned above.

The symptoms of pemphigoid are quite typical though atypical cases are often seen as in our epidemic. The skin at birth shows nothing abnormal, but between the fourth and ninth day there suddenly appears, after perhaps a slight preliminary redness, an acute outbreak of vesicles varying from 1 mm. to 2 cm. or even larger in diameter. The vesicles usually appear first around the oral cavity and generally spread with considerable rapidity to other portions of the body. Neighboring vesicles may coalesce and form lesions from 5 to 6 cm. in diameter, resulting in extensive exfoliation of the epidermis and leaving the moist red cutis beneath it. As a rule, the vesicles break early, and it is stated by Brocq that they do not involve the palms or soles, though in our first and fourth case both were markedly involved. There is said to be no elevation in temperature unless a secondary infection intervenes; while not uncommonly the infant will gain weight during the illness. As a rule in a case terminating favorably after two or three recurrences the disease disappears, the usual duration being one or two weeks. In the fatal cases the vesiculation and desquamation may become so marked that practically the entire surface of the body is involved. In such cases digestive disturbances are very severe; bacteriemia develops and extensive changes in the parenchymatous organs occur.

The typical case is quite characteristic and the diagnosis is comparatively easy; in atypical cases, however, considerable difficulty is encountered. In the differential diagnosis, congenital syphilis is probably the first disease that must be ruled out. Impetigo contagiosa seu vulgaris seu bullosa is another that may cause considerable trouble; in fact, some authors believe the diseases to be identical. Dermatitis exfoliativa neonatorum in its early stages is said to be very similar; we will mention our views on this subject later. Pemphigoid eruptions of medicinal origin, bullous-varicella of the new-born, a case of which in an infant at the age of eight days one of us has seen, and Duhring's disease (dermatitis herpetiformis Duhring) must always be in mind. Brocq states that bullous urticaria is more frequent in infants than in older children. Epidermolysis bullosa, a rare hereditary disease, must also be remembered. Köhler[18] has written a lengthy article on "febris bullosa," a disease characterized by short prodromata and fever followed by the appearance of vesicles on an intact skin. It is markedly contagious, affecting both adults and infants. There is some question whether this affection is a separate disease or only an atypical pemphigoid developing under favorable circumstances.

In congenital syphilis showing bullous lesions differential diagnosis may be quite difficult. The marked involvement of hands, feet and buttocks, however, together with the occurrence of snuffles, an enlarged liver and spleen and positive Wassermann reaction should be sufficient to simplify the matter.

There are still many workers who believe in the identity of impetigo contagiosa and pemphigus neonatorum despite the fact that such careful workers as Sabouraud,[29] Lewandowsky, Jadassohn and others have shown conclusively that the ordinary impetigo contagiosa is due to the streptococcus, and that Cole[30] has further shown that it is due to the *Streptococcus longus seu haemolyticus* in particular, while this organism has not been shown to be the etiologic factor in pemphigoid. Matzenaur[31] in particular may be

26. Zechmeister: München. med. Wchnschr., 1887, xxxiv, 737.
27. Brosin: Ztschr. f. Geburtsh. u. Gynak., 1899, xl, 418.
28. Landsteiner, K.; Levaditi, C., and Prasek, E.: Compt. rend., Soc. de biol., Paris, 1911, lxx, 643, and 1026.
29. Sabouraud, R.: Ann. de dermat. et de syph., 1900, Series 3, i, 62, 220, 426.
30. Cole, H. N.: Arch. f. Dermat. u. Syph., 1913, cxvi, Heft 1, 207.
31. Matzenauer, R.: Wien. klin. Wchnschr., 1900, xiii, 1077.

mentioned as one holding to the identity of the diseases. He may have changed his views since 1901, but at that time he cited the case of a woman with impetigo contagiosa circinata of universal extent, from which her babe, three days old, contracted a disease on those parts which came into contact with her. Of the physicians who saw the child, all were forced to make a diagnosis of pemphigus neonatorum, though in the course of a week the disease took on the characteristics of the circinata form of impetigo contagiosa. Engman,[14] as late as 1901, still believed in their identity. He was able at that time to isolate in seven cases of bullous impetigo the staphylococcus in six and a streptococcus in one case. Sabouraud[29] has shown that the streptococcus is a facultative aerobe and grows better in a liquid than in a solid medium. In order to obtain the true organism in such cases as Engman's, Sabouraud's pipette bouillon method or Lewandowsky's successive stroke-culture method must be used. In all likelihood if such a technic had been used the streptococcus might have been obtained in the first six cases. Not a few authors, however, agree with Engman and Matzenaur. Thus Bunch[32] says that pemphigus neonatorum, when transmitted to adults, always results in a typical impetigo contagiosa while the same contagium, transmitted to infants, causes pemphigus neonatorum. Faber[33] claims to have seen a specific instance of the above occurrence and states that many times crust formation is found in infants with pemphigus neonatorum. To strengthen his contention he quoted Moldenhauer in his report of the epidemic of 1872-1873 in the Leipsic clinic: "the numerous vesicles dried into a rather thick scab" (*das manche Blasen zu einem recht dicken Schorf vertrockneten*). Marsh[34] in 1910, says, "That pemphigus neonatorum and bullous impetigo contagiosa of the new-born are identical, is now practically proven." He describes three cases of pemphigus neonatorum in which two attending nurses developed typical impetigo. Luithlen[35] in 1899 reviewed the histologic picture of the two diseases and found them to be practically identical. Foerster in 1909 says, "Although many instances of an association of pemphigus neonatorum and impetigo contagiosa have been recorded, the possible identity of the two affections has not been given sufficient prominence in English dermatological literature." The main evidence as to their identity has come from their clinical resemblance in certain cases and in certain epidemiologic studies. Careful bacteriologic studies by numerous authors, however, have quite uniformly shown that in pemphigus neonatorum the staphylococcus is the etiologic agent, while in impetigo vulgaris seu contagiosa seu bullosa, the streptococcus is the organism causing the disease. It is quite probable that some cases diagnosed as pemphigus neonatorum are really bullous impetigo, as in a case of Whitfield's,[36] in which pure cultures of streptococci were recovered from the mother and infant, the baby having a bullous eruption and the mother an impetigo contagiosa of the forehead. There is one rare type of impetigo, however, from which we must admit that infantile pemphigoid can without question be contracted. We refer to impetigo Bockart staphylogenes, a disease characterized by isolated, discrete, thin varnish-like crusts limited to the follicles, that leave a pigmented area in healing, rather than redness as in impetigo contagiosa. In Hofmann's case, numerous bacteriologic examinations of both the mother and child gave only the staphylococcus, and he believes that the first case described by Winternitz[37] was a case of pemphigus neonatorum which probably was contracted from such a type of impetigo. We must also recognize the fact that several epidemics of a staphylococcus "impetigo" have been noted in Japan by Dohi and Dohi[38] in which the *Staphylococcus albus* was always cultivated. This was an epidemic and sporadic skin disease of children characterized by serous or seropurulent vesicles and bullae "that built no waxy yellow thick crusts, and left rather fine white or light yellow transparent lamellae or crusts." This type of "impetigo" has been reported in Europe and must be remembered as a possible explanation in the cases of pemphigus said to have been contracted from impetigo. As mentioned by Jadassohn, we must not forget, too, the possibility that it may be the secondarily infecting staphylococci in impetigo which cause the pemphigus neonatorum, while the streptococcus may not be so capable of infecting the infant's skin as the former organism. Only very careful observations and extensive cultural examinations will enable us strictly to rule out the possible existence of a pemphigus neonatorum due to the streptococcus. As the problem now stands, however, and in the present state of our knowledge, we must assert our belief to be that the large majority of the cases of infantile pemphigoid are due to the staphylococcus and are to be differentiated from impetigo vulgaris contagiosa.

The question of the differentiation of pemphigus neonatorum and dermatitis exfoliativa neonatorum (Ritter) now arises. We would refer any one interested in the historical side of this disease to the able article by Carlton.[7] In the year 1878 Ritter von Rittershain described 297 cases of this peculiar skin disease affecting new-born babies. It had undoubtedly been observed previously, but he was the first author to describe it accurately and to recognize its clinical significance. The disease begins during the first or second and up to the fifth week of life. It is characterized by a not sharply defined redness which is at first most marked around the mouth and spreads rapidly over the entire body or portions of it. With this there is an increased turgescence of the skin and the connections between the rete malpighii and horny layer become loosened so that, at times, spontaneously or with slight trauma, the latter can be removed in large placques as in pemphigus foliaceus, leaving a dark-red moist or dry bed beneath it. The horny layer of the hands and feet may sometimes be removed as a glove, as in our case, and according to the intensity of the disease vesicles, bullae and cracks in the true skin may occur. Following the breaking of the vesicles or bullae crust may form. The entire process usually lasts a week or ten days and is fatal in 50 per cent. of the cases. As in pemphigus neonatorum the patient may have no elevation in temperature and may make the normal gain in weight during the duration of the disease. The complications and histologic findings are similar to those in infantile pemphigoid. Luithlen finds a marked proliferation of the rete malpighii in its lower layers with a lack of cornifica-

32. Bunch, J. L.: Brit. Med. Jour., 1908, ii, 1260.
33. Faber: Monatsh. f. prakt. Dermat., 1890, x, 253.
34. Marsh, A. D.: Yale Med. Jour., 1910, xvii, 90.
35. Luithlen, F.: Wien. klin. Wchnschr., 1899, xii, 69.
36. Whitfield, A.: Brit. Jour. Dermat., 1903, xv, 218.
37. Winternitz, R.: Arch. f. Dermat. u. syph., 1898, xliv, 397.
38. Dohi, K., and Dohi, S.: Arch. f. Dermat. u. syph., 1912, cxi, 629.

tion and casting off of the upper layers. He believes that the disease begins with a hyperemia and exudation in the papillary and subpapillary layers and as an expression of this there is a hyperemia of the skin with consequent disturbances in the normal nutrition of the epidermis leading to a proliferation of the rete malpighii which causes the scaling. Winternitz found much the same histologic picture and was able to cultivate the staphylococcus from the blood. Della Favera's findings agree with the preceding, but he believes that the epidermal changes are dependent on lesions lower down in the corium. He also found the staphylococcus in the blood. From his studies, he believes that the lesions in pemphigus neonatorum are more localized in the papillary body and that the changes were more striking in the epidermis. He admits that it is sometimes difficult to distinguish between the two diseases, but he was unable to find in the literature any mention of a case of pemphigus neonatorum starting from a dermatitis exfoliativa neonatorum (Ritter). Other authors do not agree with Della Favera in this latter critical statement. For example, our own epidemic started with an infantile pemphigoid and later changed into a typical clinical case of dermatitis exfoliativa neonatorum. In Hofmann's case the disease began on the fourth day with a typical Ritter's disease, which on the seventeenth day changed to an ordinary pemphigoid with staphylococcemia and death on the twenty-ninth day. The mother had a few impetigenous lesions of the staphylococcic type which were the source of the infection. Bloch, from his-experience in the epidemic from Baginsky's clinic, says he can see no reason why the two diseases should be differentiated, for, in nearly all his cases, at least two-thirds of the skin could be stripped off as in a burn. Thus we are able to cite cases changing from Ritter's disease into pemphigus neonatorum and vice versa. Epidemics result from both diseases of varying severity, the histologic findings are similar and the etiologic agent is the same, and therefore we feel with Richter that "dermatitis exfoliativa needs no other classification than as a variety of pemphigus neonatorum, characterized by an especially ready exfoliation of the epidermis with malignity."[39] We share this opinion along with such men as Jadassohn, Hedinger, Baginsky and others. Undoubtedly the condition of the skin, state of maceration, age of the infant and severity and extent of the infection have a large influence on the character of the lesions found, and this may, and probably does explain in a large part their variability. There is no reason why there should be a differentiation between the two affections. It would seem that Ritter's disease is only a malignant type of infantile pemphigoid.

The prophylaxis of infantile pemphigoid is extremely important. Because of the marked contagiousness and high mortality, we believe that laws should be enacted placing this disease among the reportable and quarantinable diseases. Impetigo contagiosa is, in many states, a reportable disease, but we find no mention of pemphigoid seu pemphigus neonatorum. We feel that this is very important and might be the means of saving many lives in the future. Once the disease is started in a babies' or maternity hospital, only the most stringent quarantine will stop its ravages. Removal of both mother and infant to a contagious disease hospital in which the technic of aseptic nursing is well understood and carried out, would no doubt save lives, trouble and expense.

In view of the excellent results in our cases we would recommend the use of autogenous vaccine in all cases,[40] though when a bacteriemia has already developed it would be of quite doubtful value. Locally, astringents and drying powders appear to give the best results, while ointments in our experience were worse than useless, serving only to help spread the disease. Tincture of iodin, 1 to 3, in water may be of some service on single lesions.

39. Die Dermatitis Exfoliativa braucht vielmehr nichts anders zu sein, als eine durch besondere leichte Ablösbarkeit der Epidermis und Malignität charakterisierte Untergruppe des Pemphigus Neonatorums. Richter: Dermat: Ztschr., 1901, viii, 507 and 680.

SUMMARY

1. In an epidemic of nine cases of "infantile pemphigoid" (pemphigus neonatorum) it was possible to isolate in pure culture the *Staphylococcus aureus* in all cases in which unbroken vesicles were to be found. In one case the termination was fatal and a coccus was found in the internal organs at necropsy.

2. The epidemic was started from a case of typical pemphigoid of the new-born, which later changed into a clinical picture of dermatitis exfoliativa neonatorum (Ritter), and as the etiologic agent in the two diseases is the same we believe there should be no distinction between them.

3. Impetigo contagiosa seu vulgaris seu bullosa (streptogenes) should be sharply differentiated from infantile pemphigoid because of its different bacteriologic origin.

4. We believe that infantile pemphigoid (pemphigus neonatorum) should be placed among the reportable diseases because of its severe epidemic characteristics and high mortality (from 25 to 50 per cent.).

5. Because of the striking results obtained in our epidemic we would recommend the use of an autogenous vaccine in all cases of infantile pemphigoid.

ABSTRACT OF DISCUSSION

Dr. William A. Pusey, Chicago: I was much interested in the discussion of the ever-recurring question of the identity and lack of identity of these various bullous affections. I have nothing to say on the subject, however, except to protest against the use of the term pemphigoid as a noun. We already have sarcoid, a very catchy word which everyone remembers, although no one knows what it is, and we have erysipeloid, and now we have pemphigoid. Oid is an adjective terminal and to use such adjectives as nouns is bad English. Usage has already fixed it in sarcoid and erysipeloid, but bad forms should not be increased; we have to defend too many of them already.

Dr. A. Ravogli, Cincinnati: Some years ago I published a report of a similar case under the title of dermatitis exfoliativa neonatorum (Ritter), the affection occurring in an infant whose mother had been delivered by a midwife who at the time was suffering from a kind of paronychia. A few days after birth the child became feverish and developed bullae larger than the palm of the hand over the entire body. Death occurred from exhaustion. I also object to classifying these diseases under the name of pemphigus or pemphigoid. It is quite a different disease which clearly shows an infectious nature, and it is due to the staphylo-

40. Since the above was written one of the authors was called to see a child 15 days old who had a typical severe pemphigoid which had persisted for 10 days. A vaccine was made from the staphylococci obtained in pure culture from several young unruptured bullae. Marked improvement was noticed three days after the first dose and on the seventh nearly all the lesions had completely healed and no new lesions had appeared. Two days after the babe was seen the mother developed vesicular and pustular lesions on the breasts from which no uncontaminated cultures could be obtained.

coccus. In the case I have referred to, large numbers of these micro-organisms were found. Nearly all the cases I have seen ended fatally.

DR. H. N. COLE, Cleveland: The term pemphigoid was suggested because we felt that pemphigus was not a good name for this affection, and as it was somewhat similar clinically to pemphigus we adopted the name pemphigoid. As these cases are unquestionably due to the staphylococcus, there is a great field here for the use of autogenous vaccines, and I trust that others will give them a trial when such a case comes under their observation.

PENETRATING WOUNDS OF THE ABDOMEN *

RANDOLPH WINSLOW, M.D.
BALTIMORE

The subject of the treatment of penetrating wounds of the abdomen is of perennial interest. Notwithstanding the establishment of the International Court of Arbitration at the Hague, and the negotiation of arbitration treaties, wars and rumors of war are still rife. In civil life, also, strife is frequent, and deadly lesions are not infrequently inflicted. In considering penetrating wounds of the abdomen we must divide the subject into two classes: First, those occurring in civil practice, and second, those occurring during military service.

In this country, since the great Civil War, injuries of this character generally have been the result of individual frays or accidents, and are usually inflicted by missiles from pistols, rifles, shotguns and toy cannons, propelled at a moderate velocity and causing extensive lacerations of the tissues and viscera; or by stabs with knives, scissors or other sharp-pointed objects. Hospitals are usually conveniently accessible and such cases are generally promptly carried to suitable institutions, where they can receive appropriate care. Twenty years ago it was thought that the last word had been said with regard to the treatment of gunshot wounds of the abdomen, and that the rule had been firmly established to open the abdomen in all such cases, but the experience of the Spanish-American and Philippine wars cast doubt on the propriety of operative procedures in active military practice. The conflicts in various parts of the world since 1898 have still farther emphasized the impropriety of active surgical interference in this class of cases. Notwithstanding this opinion which has been rather reluctantly accepted by the profession, it was still thought that penetrating wounds of the abdomen occurring in civil life always demanded exploration. I am, therefore, surprised to find that Colonel Lagarde, in his recent book on gunshot wounds, casts a doubt on the advisability of laparotomy in civil as well as in military practice. He fortifies his position by quoting the results of both non-operative and operative treatment of penetrating gunshot wounds of the abdomen, in the great Charity Hospital of New Orleans, which appear to have less mortality when left to nature than when subjected to operation. He also expresses the opinion that the operative treatment of these injuries is followed by a higher mortality than formerly and attributes this to the fact that the pistols and revolvers now in use inflict more serious injuries than formerly. After a considerable personal experience with penetrating wounds, I am firmly of the opinion that all such wounds should be operated on if seen sufficiently early and if there are no urgent contra-indications to operative procedures.

In many explorations I have seen but two gunshot wounds from which I think the patients might have recovered without an operation, and but one patient not operated on primarily, in whom there were undoubted serious lesions, recovered, and she had an extremely stormy time and required several operations subsequently for subdiaphragmatic abscesses. She eventually recovered her health. My attention has been called to this matter again within a month by the following deplorable case, which forcibly illustrates the danger of delay in the performance of laparotomy.

REPORT OF CASE

May 25, 1914, at about 7 p. m., a student at a well-known college was shot in the abdomen with a 32 caliber bullet, the missile first passing through a door panel. He was rushed to a hospital in the same town and was attended by local physicians. A surgeon was not summoned until the next day, and it was at least twenty hours subsequent to the shooting when he came under the care of competent surgeons. An inspection showed a healthy, well developed young man, about 20 years of age, with a large pistol-wound in the lower right side of the abdomen. He was suffering considerable pain, had an anxious expression, had vomited frequently, pulse was about 120 and thready, abdomen hard and tender, and the mouth temperature was but little elevated. He was at once taken to the operating room, anesthetized, and the abdomen opened through the right rectus muscle. A large quantity of dark-colored, ill-smelling fluid at once escaped through the incision. The intestines were red and covered with lymph, and when the nearest loop of intestine was withdrawn three ragged holes were found, in close proximity, in the ileum. After stripping the fibrinous exudate from the margins of the openings they were closed in the usual manner, with silk sutures. Four drains were inserted into the pelvic cavity and the patient returned to bed in pretty good condition. He was then placed in Fowler's position, and rectal instillation of hot water instituted. He did not respond favorably to the treatment, though the vomiting ceased and the abdomen remained flat, and he died about forty-eight hours thereafter.

In domestic brawls most penetrating wounds are inflicted by pistol-shots, and a single projectile may cause from one to twelve perforations of the intestines and other viscera. In a case of my own in which there were two shots, one passing from before backward and the other in the opposite direction, there were twenty-five perforations of the intestines, one of the mesentery and two of the bladder. Rifle-shots are not so common in civil life, but may be received either by accident or by design. In similar manner, injuries from the discharge of shotguns occur occasionally, and, when close to the object, the lesions may be very extensive and ghastly. At a greater distance there may be multiple perforations of the intestines. My colleague, Dr. J. Holmes Smith, operated successfully on a patient in whom there were fourteen perforations from a load of bird-shot. Very occasionally lesions are produced by air-guns, toy pistols and toy cannons. I have had one case in which boys firing a toy cannon loaded with buckshot caused a perforating wound of the stomach. Stabs with knives are not infrequent and occasionally similar injuries are inflicted with scissors or with other pointed objects. In one of my cases a man with melancholia inflicted serious injuries with a pair of shears found in a barn. Pistol-balls usually lodge in the body though at times

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

they pass entirely through, having a wound of entrance and one of exit. It is absolutely impossible to determine the amount of damage done except by a laparotomy or a post-mortem examination. Projectiles passing transversely or obliquely across the abdominal cavity can scarcely fail to produce many and scattered lesions.

SYMPTOMS

While there may be positive signs of penetration and of perforation of the viscera, such is not usually the case. There may be vomiting of blood which would suggest an injury to the stomach or duodenum; or bloody stools indicating lesions of the intestinal tract or blood in the urine or the escape of fecal matter, bile or urine from the external wound, or the protrusion of the omentum or intestines. These signs, however, are usually absent and the diagnosis of penetration must be made from other phenomena. Shock may or may not be present, but it is of no special diagnostic significance. In many cases it is not present and when present it is no criterion of the injuries sustained. If the shock is persistent it usually indicates hemorrhage. The presence of concealed hemorrhage may be suspected from pallor, weak pulse, clammy skin, and the presence of shifting areas of dulness in the flanks.

The most manifest sign of a penetrating lesion is the location of a pistol or stab wound on the front or side of the abdomen, and this justifies an exploration. More difficult it is to decide whether wounds of the thorax, back, pelvis, scrotum and buttocks also penetrate the abdomen. In such cases we must rely on general symptoms to guide us in our diagnosis and treatment, such as increased frequency of the pulse, vomiting, pain, tenderness and rigidity of the abdominal walls, with or without elevation of temperature. We should try to ascertain not only the character and size of the weapon and projectile used but the distance of the patient from the assailant, as well as the position of the assailed when shot or stabbed. A pistol or stab wound located over the abdomen is sufficient justification for an exploration of the wound and of the peritoneal cavity. Symptoms are misleading and one should not wait to see if deleterious symptoms may develop but should ascertain by sight and touch the true condition of the internal organs. Patients in whom there is a reasonable suspicion of penetration of the abdominal cavity should be subjected to laparotomy without delay.

PROGNOSIS

The prognosis of penetrating wounds of the abdomen is always grave, and depends on many factors, such as the size and nature of the vulnerating body, the organs and structures injured, the fulness or emptiness of the hollow viscera, the presence or absence of serious hemorrhage and especially on the time at which the case comes into the hands of the surgeon, as well as on the treatment that has been instituted previous to coming to the surgeon. In perforating wounds of the hollow organs death almost invariably occurs if the patient is not operated on. In some penetrating wounds of the stomach and large intestine death does not occur, as the mucous membrane may become everted and so plug the opening, or in the case of the large intestine the perforation may be extraperitoneal and the intestinal contents may not enter the peritoneal cavity. Wounds of the solid organs are not invariably fatal even when left to nature. I do not believe that the results of laparotomy and suture of the lesions are likely to be much better than those that have been attained hitherto. The general mortality of the operative treatment of penetrating wounds of the abdomen is at least 50 per cent. and it is not likely to be much, if any, less, if the cases are honestly reported. Some operators will have better success than others, either because of superior skill or on account of having to deal with less serious injuries. Complicated injuries such as penetration of the chest and diaphragm, fracture of the ribs or pelvic bones, injuries of the vertebrae and spinal cord, and serious loss of blood must always increase the mortality. Stab wounds are less serious than gunshot injuries, as the lesions are more localized and clean-cut, and are likely to be less extensive; but the hemorrhage is usually greater. The prognosis will also be affected by the age, general health and physical condition of the patients. Very young persons as well as the aged, debilitated and obese are not likely to survive such injuries, whether operated on or not.

TREATMENT

When a person is shot or stabbed in the abdomen no probing of the wound should be done, nor should it be interfered with in any manner except to apply an aseptic dressing, or if that is not at hand, to lay a piece of clean cloth over the injured area. The patient should then be transported to a hospital without delay, and be placed in the care of a competent surgeon; or if a hospital is not accessible he should be taken to the place at which he is to remain, and the most competent physician available summoned.

The patient's abdomen should now be thoroughly cleansed, or painted with iodin, and the track of the bullet should be incised and followed, if there is any doubt that it has penetrated the peritoneal cavity. Sometimes it may be best to open the abdomen through the bullet wound, but generally the best incision is in or near the midline, as it permits a more thorough exploration of the viscera. If the patient is shocked it is usually due to hemorrhage, and he should be infused intravenously with salt solution and the operation proceeded with. Bleeding should be controlled by clamps and ligatures. In gunshot injuries the bleeding is usually not great, but large vessels may be lacerated and the hemorrhage be severe. In stab wounds the hemorrhage is often severe. Sometimes it will be necessary to compress the aorta or the vena cava in order to control the hemorrhage. Wounds of the liver, kidneys and spleen often bleed freely, and may be controlled by suture and packing; or in the case of the kidneys and spleen by removal of the organ. After attending to the bleeding the viscera should be explored systematically for perforations, which should be closed with the usual forms of intestinal sutures. When the intestinal perforations are close together it may be necessary to resect the intestine and perform circular enterorrhaphy or lateral anastomosis, which may also be necessary when the wound is on the mesenteric border of the intestine or when the mesentery is detached. After making a careful examination of all the viscera that are likely to have been injured, the peritoneal cavity should be flushed with hot salt solution and ample drainage provided, both at the seat of the injury, and in the pelvis. The abdominal incision is partially closed, leaving room for the exit of the drains. Subsequently the patient

is placed in Fowler's position, and if the perforations are not situated too low down, the rectal instillation of hot tap-water should be commenced at once.

This is in brief an outline of the treatment of penetrating wounds of the abdomen according to my understanding of the subject. In all intestinal and visceral injuries, whether perforation from typhoid ulcers or ulcer of the stomach or duodenum, or subparietal traumatisms, or perforating lesions of the hollow organs from gunshots or stabs, the treatment should be a laparotomy, and the substitution of methods of precision for those of doubt and uncertainty.

PENETRATING WOUNDS OF THE ABDOMEN IN MILITARY PRACTICE

Following the suggestion of Marion Sims in 1881, as the result of his observations in the Franco-Prussian war, it was hoped that a great lessening of the mortality of penetrating wounds of the abdomen as the result of early operation would occur in subsequent conflicts. This anticipation, however, has not been realized. It was early seen in the Spanish-American war and the Philippine insurrection, that serious injury to the abdominal viscera was frequently recovered from when left to nature, while those patients who were subjected to laparotomy almost invariably died. This unexpected result has been still further confirmed by the observations of surgeons in the Anglo-Boer and Russo-Japanese wars, and in the recent struggles in the Balkans. The conditions in the field are entirely different from those in civil life. Many of the wounded die on the battle-field before any assistance can be afforded them; but even when they do not speedily perish, there is no time or opportunity to undertake such operations when they can be done with any hope of success. The confusion, hurry, insanitary surroundings, flies, dirt, dust and often lack of water, all combine to render it almost or quite impossible to secure asepsis, and make abdominal exploration exceptionally unsafe.

As has been stated, a considerable proportion of those who have penetrating abdominal wounds, with probable visceral lesions, recover if left alone. The reason for this unexpected result is to be found in the character of the modern weapon. The projectiles from the modern army-rifle are long, pointed and narrow, steel or nickel jacketed, and are propelled with great velocity. At close range they make ragged and generally fatal wounds, but at the ordinary battle ranges they make clean wounds and usually pass entirely through the body. The intestines are either pushed aside or the perforations are small and without leakage. The missiles themselves appear to be aseptic or at least cause but little trouble. It seems impossible that a rapidly moving projectile could traverse the abdominal cavity obliquely or transversely without causing perforations of the hollow organs, but such seems to be the case in some instances. As many of these patients recover under expectant treatment, and but few under operative methods, military surgeons in the field are not justified in performing laparotomy in this class of cases.

When gunshot or stab injuries of the abdomen are inflicted while the troops are in garrison and can be operated on as early as in civil practice, it is my opinion that they should be subjected to the same treatment, that of laparotomy and repair of the lesions inflicted.

SUMMARY OF CASES

My experience is limited entirely to cases occurring in civil practice.

The total number of cases treated by me and my personal assistants has been 44.

Cases in which laparotomy was not done, 6; recovered, 2, or 33 per cent., died, 4, or 67 per cent.

Penetrating wounds of the abdomen in which laparotomy was done, 38; of which 21 recovered, or 55 per cent., and 17 died, or 45 per cent.

Penetrating wounds with perforations of the hollow viscera 31; of which 15 recovered, 48½ per cent., and 17 died, 51½ per cent.

Gunshot wounds with perforations of the hollow viscera, 25, recovered 10, 40 per cent., died 15, 60 per cent.

Stab wounds with perforations of hollow viscera 6, recovered 5, 83 per cent., died 1, 17 per cent.

Cases in which the liver and spleen and other structures were injured, but without perforations of the hollow organs, 7; recovered 6, 86 per cent; died 1, 14 per cent.

The stomach was perforated in 11 cases, with 5 recoveries, 45½ per cent., and 6 deaths, 54½ per cent.

The intestines were perforated in 29 cases, with 15 recoveries, 51¾ per cent., and 14 deaths, 48¼ per cent.

The urinary bladder was wounded but once in 44 cases of penetrating abdominal wounds. The gall-bladder has not been injured in any case of my own; but I have seen a case in the hands of a colleague, followed by recovery.

1900 Mount Royal Terrace.

ABSTRACT OF DISCUSSION

DR. ERNEST LAPLACE, Philadelphia: I wish to express my approval and appreciation of the conservative stand taken by Dr. Winslow on this important subject. There is but one question at issue—to operate or not to operate. Statistics are often misleading. We must adopt a policy as to whether it is right in cases of penetrating wounds to undertake an exploratory operation at once provided this can be done with modern requirements of surgery. I say unhesitatingly yes under all circumstances. It is the patient's only chance and it cannot be given to him too soon. Should a fatal termination take place without surgical interference then somebody has blundered in letting the precious moment pass by when operation might have saved the patient. This policy is to my mind the surest one for saving the greatest number of patients.

DR. CUNNINGHAM WILSON, Birmingham, Ala.: Dr. LaGarde in his recent book has doubted the advisability of operating on patients in military practice. I see no reason in this day why a man should any more neglect to operate on a gunshot wound of the abdomen than he would on a typhoid perforation. I think they are both in exactly the same class. We have probably had patients in both conditions get well. Another point on which I do not quite agree with Dr. Winslow is the question of hemorrhage in gunshot wound of the abdomen. It has been my experience that it is really, in recent cases, a question of the amount of hemorrhage. The mortality in all cases of this kind is due to the great amount of blood lost, making very little difference how many perforations there are. A few years ago I reported at the Louisiana State Medical Society a series of twenty-five of my personal cases, with ten deaths. I flattered myself on the recoveries, but I think it was because I happened to get a run of pretty good cases. Since that time I have had twenty-two or twenty-four cases and I have almost reversed myself. I have had instead of 65 per cent. recoveries, a mortality of about 65 per cent. The thing that I have not been able to understand is

why the military surgeons do not prepare themselves, or will not be prepared, to operate on such conditions in war as well as in civil life.

Dr. Jacob Frank, Chicago: Recently I have contributed to the *Military Surgeon* and the *Deutsche Militärärztliche Zeitschrift* articles on this very subject from the point of view of the military surgeon. I agree with Dr. Winslow in the practice of gunshot wounds in civil life. I carried out the same treatment in my civil practice as does Dr. Winslow, and I cannot see why this same treatment cannot be practiced in military surgery, provided we have the proper equipment and surroundings. The reason military surgeons say, as does Dr. Winslow, leave these wounds to nature, is because when a man is shot in the abdomen on the firing line he lies there from four to ten hours or even longer before he is carried back to a first-aid station. There the wound is sealed up with a so-called first-aid packet or dressing and the patient is sent to the field hospital. Meanwhile twelve to twenty-four hours elapse before the patient reaches the hospital. On arrival septic peritonitis is so pronounced that it is too late to operate, and if operation is performed the results are disastrous. Why do they do this? To prevent ectogenic infection. Is there more danger of infection on the battle-field than in a large city where everything is teeming with bacteria? What is accomplished when the wound is sealed up? The germs within are sealed up, and, where can be found a better place for the propagation of, say, the colon bacilli than in the abdominal cavity? I can readily see why so many die and why they advise against operation in perforating gunshot wounds of the abdomen. It is not an easy matter to get the government to furnish the proper equipment to operate on these patients in the field; however, this could be supplied. If instructions were given to introduce immediate drainage for the purpose of allowing the bacteria, intestinal contents and gases to escape through the wound, there necessarily would result less danger to the peritoneum than from sealing up the wound. We are told that the field is dirty and that the attendants' hands are soiled; but dirt is not necessarily identical with pathologic germs. The great cry has been the danger from tetanus. We know that there is less danger from tetanus on a field that has not been trampled over for months or years than in a large city with an infection-spreading population! Let us suppose that a drain has been introduced soon after receipt of an injury. When such a patient reaches the field hospital an opportunity is afforded the surgeons for individualization. They will either renew the drainage or operate, as conditions indicate. Let us have this plainly understood, that by sealing up this class of wounds we probably prevent infection from without but positively invite the most virulent infection from within. In my judgment, the avoidance of the latter will mean the saving of many lives doomed from the beginning unless nature is assisted, and this can be accomplished only by drainage plus the usual conservative treatment.

Major Clyde S. Ford, Washington, D. C.: As a military surgeon I feel the onus of defense of my colleagues, inasmuch as their practice of non-interference with abdominal gunshot wounds in war seems to be questioned. From my observations in the Balkan wars, I have no doubt that the expectant treatment of gunshot wounds of the abdomen, in military surgery, is rational and is amply justified by experience. Among 500 cases in my service in Constantinople all of the patients with abdominal wounds when admitted were on the way to recovery notwithstanding the danger, distress and lack of transportation in the flight of a routed army. Many cases, owing to the essential injury or abuse, must have perished on the field. I can offer no comparisons, in figures, but as many of these patients recovered without operation, and as the decidedly great majority died with operation in the field, it seems probable that the soldier will fare better with his abdominal wounds left untouched. In Constantinople twelve cases of abdominal gunshot wounds were received in a military hospital within twenty-four hours after occurrence; the patients were all operated on and all died. No question need be raised as to the skill of the operator, or care in the hospital; both were under the direction of a most capable and scientific German surgeon, Wieting Pasha, and were superior to anything that could obtain in the field. In an evacuation hospital in the Bulgarian army at Kustendil, 10,000 wounded were admitted within a month. Two thousand of these were first treated by a Bulgarian colleague and myself—500 in one day. The hospital, in a high-school building, had fair facilities for aseptic surgery. Our patients —most of them—were carried four days in bull carts, over the roughest mountain roads, and many of them bore abrasions on their backs to mark the journey's trials. Abdominal wounds were found resolving spontaneously or with localized abscess or with general peritonitis. In the latter class the twenty patients operated on all died. One accidental wound received in camp adjoining the hospital was operated on within six hours and the patient died. Incidents of transportation, before and after operation, lack of operative facilities and deficiencies in postoperative treatment, furnish positive indications for non-interference. It has been said here that the surgeon must always try to do something—the best he can—for these cases, but it does not follow that he must try an operation. Nature's trial is sometimes better for the patient than the surgeon's interference. In the German and Austrian armies instructions are issued to the sanitary service, in unequivocal terms, that gunshot wounds of the abdomen are not to be subjected to operation in the field. Von Oetlinger is the authority for this practice and his conclusions are based on experience with military conditions. Dr. Winslow's paper has been edifying and instructive and his conclusions from his experience in hospitals, in civil life, are convincing, but the rule of non-interference with abdominal wounds in war is based on other conditions.

Dr. F. N. McRae, Atlanta, Ga.: Those of us from the South have seen more than an average number of penetrating wounds of the abdomen. In Atlanta we see a great many in civil practice. There are several little expedients. Our statistics will never be fair until they state the length of time elapsing between the reception of the injury and the resort to operation. An operation done within an hour gives a patient 75 per cent. better chance than an operation done six hours after the injury. An operation done after brief transportation gives a patient a much better chance of life than operation done after long transportation when shaking up tends to disseminate infection in the abdominal cavity. Dr. Parker, then of New Orleans, said "get things clean, get into the abdomen, do your work and get out." Chronic surgery has no place in penetrating wounds of the abdomen. The surgeon must get to his work quickly, do it thoroughly and then get out. One of the expedients I found was slipping a loop of catgut around the intestine to mark the beginning point, trace, wash off with salt solution and close the perforations as you go. The late Dr. Douglas of Nashville, Tenn., collected statistics of those cases flushed and those of the dry toilet. The statistics were in favor of the dry toilet. I do not think flushing the abdomen is good practice in many cases. It tends still more to the dissemination of the infection. The location of the wound has a great deal to do with the results. The patients who recovered from wounds of the large intestine had extraperitoneal wounds as he stated. The other point mentioned that is of great value is the removal of the spleen and kidney when they have been seriously injured. I know of deaths in several instances following attempts to save a kidney when extensively lacerated. These patients almost always die unless nephrectomy is performed at the time of operation.

Dr. William L. Rodman, Philadelphia: The paper by Dr. Winslow is safe, sound and sane in all particulars. I would particularly make the point with reference to side to side flank feeling. Not only may you have as many as twelve wounds, but I had one boy shot accidentally with a rifle with twenty-one perforations. As he was gotten into the hospital within one hour after the accident he was operated on immediately. The military surgeons, though, I am satisfied are right. The difficulties on the battle-field are insuperable. In the first place, just as Dr. McRae said, it is the time at which

the operation is done. He spoke of Douglas' statistics; he quoted Siegel's statistics. I think I can recall those statistics exactly: If the operation is done within the first twelve hours the mortality is 15 per cent., the third twelve hours it is 67 per cent., and if it is done after that time it is over 70 per cent.; but even in late cases men sometimes get well. One man was shot Friday morning, carried over a rough road, was operated on the following Sunday at 12 o'clock, which you see is the time I specified. He had general peritonitis and a stormy convalescence, yet he recovered. Again, I have operated early in cases in which the patients died. I think the whole question hinges on the time, the damage wrought and particularly whether solid or a hollow viscus has been injured. I absolutely agree with Dr. Winslow that the small ball going with many revolutions a second and cutting like a knife, may go through the liver and do practically little damage, or through the lungs, and these men are often on the firing line within a short time. As to the last question raised by Dr. McRae, I think he takes the correct stand. It also depends on the amount of soiling of the peritoneum. If you operate within the first six hours, where the mucosa acts as an ectropion, plugs the wound, and there is some sepsis, there will be no extravasation; but it comes later. If there is gross soiling, however, the only thing to do is to flush and make an opening above the pubis and drain. In the early cases in which there is no visible soiling, flushing does harm if the peritoneal cavity be full. I think Dr. Winslow has given us many accurate statistics. In my own experience gunshot wounds of the abdomen have been very fatal and I think he is right that 50 per cent. will get well and 50 per cent. will die.

DR. RANDOLPH WINSLOW, Baltimore: Dr. Frank is a brigadier-general while I am a first lieutenant in the medical reserve corps, and I would like to take orders from him in military surgery, but I am afraid that from what I have read, not from what I have seen, it would be quite difficult to do a safe laparotomy on the battle-field. I would not like anyone to suppose that I flush every abdomen. It is only in case there is soiling, and perhaps not always then.

ABDERHALDEN'S TEST IN THE DIAGNOSIS OF CANCER*

C. F. BALL, M.D.
RUTLAND, VT.

Statistics, together with the dreadful nature of the disease, demand that any and every method proposed for the early diagnosis of cancer should be thoroughly and impartially tested. Emil Abderhalden of Halle, Germany, recently presented to the medical profession a biologic test that is demanding the closest attention. Time alone can thoroughly prove the accuracy of his test, and only as impartial reports of large numbers of cases examined are offered by reliable workers. It is readily apparent by a casual review of the literature pertaining to the test that the differences in the results obtained are due to some variation as to technic, selection of tissues used as fundaments, unless the test is unreliable. Frankel states that the Abderhalden reaction was not reliable in the cancer cases examined at the research institute at Heidelberg, while Frank and Heimann, Marcus, Epstein, Erpicum abroad, and Lowry in this country report more favorable results.

Apparent errors in the specificity of the test do not appear to be evidenced by malignant conditions failing to give a reaction, as much as the finding of a positive reaction in individuals almost certainly not malignant. My experience with this test would indicate that there are some conditions clinically not malignant that occasionally give a positive malignant reaction when not expected; as, for instance, certain pathologic conditions, as myomas of the uterus, and even the physiologic condition of pregnancy in a few instances, as has also been noted by Frank and Heimann. Especially is such a reaction to be obtained if a cancer of the uterus were used as the prime fundament. The uterine cell in such tissue is digested instead of the cancer-cell. For this reason a cancer of the uterus should never be used for making the test. Data based on such work are necessarily unreliable (Table 1). The majority of positive reactions tabulated as errors in my clinically non-malignant cases were secured by the use of such tissue, used for a time without recognizing its treacherous nature. It is notable that all of these cases possessed a distinct pathologic uterine condition—myomas, metritis and endometritis. The elimination of these cases in my series greatly increased the percentage of accurate

TABLE 1.—CLINICAL CLASSIFICATION OF EIGHTY-TWO ABDERHALDEN REACTIONS

CLINICALLY MALIGNANT	Reaction	
Location of Known Cancer Growth	Positive	Negative
Breast	3	..
Uterus	3	..
Stomach	1	..
Liver	2	..
Sigmoid	1	..
Cervical Glands	2	..

SUSPICIOUSLY MALIGNANT	Reaction	
Location of a Suspicious Tumor	Positive	Negative
Breast	2	1
Uterus	10	..
Stomach	10	4
Liver	..	1
Gastro-Intestinal	4	1
Sigmoid	..	1
Bladder	2	..
Testicle	1	..
Thyroid	4	..
Congenital Nevi	1	1
Pancreatic Diabetes	1	..
Cancer of the Tongue	1	..
Ulcer of the Tongue	1	..

CLINICALLY NOT MALIGNANT	Reaction	
No Cancer Manifestation of any Degree	Positive	Negative
Normal Males	..	3
Normal Females	..	2
Pregnant Condition	7	7
Simple Hyperthyroid	..	1
Sciatica	..	1
Uterine Disturbances	2	..
Peritonitis	..	1

interpretations, in nearly one hundred examinations, largely clinical as well as experimental. There were, however, a few with which by repeated examinations with indifferent cancer tissue only a positive reaction could be obtained. Of these one has to class them either as errors, or admit the possibility of an individual giving the test that has harbored an invasion and recently dispelled it (Vaughan), or possesses an active invasion (second-degree cell proliferation of Mayo) that had not at the time of the test made itself manifest by even suspiciously clinical symptoms. I am led to consider the latter possibility by the developing histories obtained in several of these cases since the making of the tests. That is, they have progressed to a third-degree proliferation. I admit that in the remaining few cases there is absolutely no reason as yet for thinking the test other than erroneous.

PRACTICAL APPLICATION

The differences of opinion that arise relative to the findings in the suspiciously malignant cases develop the practical application of the test. The finding of a

* Read before the Section on Pathology and Physiology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

positive reaction in a known malignant condition is gratifying but of little practical value to the sufferer. The weight of responsibility resting on a positive or negative finding in suspiciously malignant individuals is tremendous. Until further work perfects the technic, a clean-cut, negative reaction carries much more weight than a positive one, because of the many possibilities contributing to an erroneous positive finding. A negative reaction associated with a negative bismuth injection differentiated a grave secondary anemia of a suspected malignant origin, from what has subsequently proved by a regular blood-study to be pernicious anemia. In gastric conditions the test is useful in answering the uncertain roentgenographic findings obtained from a small carcinoma or callous ulcer. Case says, "I do not know of any way to differentiate from the x-ray findings alone between the defect caused by a small carcinoma and that caused by a callous ulcer." I believe that the Abderhalden reaction is especially valuable in answering quite positively any question arising as to the actual cause producing some of the border-line roentgenographic filling defects. The association of this test with the bismuth meal and injection makes the strongest combination now at our command in the diagnosis of gastro-intestinal diseases.

SELECTION OF FUNDAMENTS

I am confident that it has been found by all working with the test that the preparation and preservation of the substrate has been vexatious. While one working with the pregnancy test has necessarily but one prime fundament, one working with the cancer reaction has several varieties of tissue at his command. Experience has taught me that the selection of the tissue for the best results is fully as difficult as either the preparation or preservation. The fresher the tissue the better the results. As soon as it is found that it takes more than four to six boilings, after careful washing, to clear the tissue for use, it becomes necessary to be especially guarded in the interpretation of reactions obtained with such tissues. It is better to discard it as useless. The case used in freeing the tissue of blood and the putting away of the tissue in relatively small quantities in relation to the amount of chloroform-water used, covered with toluene, largely determines the value and length of time of preservation. All my tissue has been kept in an ice-box maintaining a temperature of about 8 C. (46.4 F.). Treacherous tissue will give treacherous results no matter how careful your technic may be. Such tissue is even worse than loose thimbles.

Experience teaches one to avoid using any cancer-tissue as a fundament that is mixed with a large amount of the tissue invaded, as for instance, cancer of the

TABLE 2.—FUNDAMENT REACTIONS

| Reactions | Combined Cases Clinically or Suspiciously Malignant | | |

uterus, as previously mentioned. Metastatic glandular tissue is far preferable to tissue from the primary invasion. It usually contains a larger proportion of actual cancer-cells than any other tissue available.

Fresh tissue secured from a person accidentally killed should always have first choice. Tissue from the operating-table usually has to be accepted and is far preferable to tissue obtained at necropsy. Tissue received at necropsy that requires many repeated boilings to render it negative to ninhydrin should be condemned. When tissue requires many repeated boilings, there is such an amount of the protein material already broken down, at or near the amino-acid stage by decomposition, that it reacts to ninhydrin even though it may not have been acted on in the incubator by its accompanying serum. Bad tissue explains practically all of our erroneous findings. Bad thimbles come second.

Tissues used as substrate or fundament should be accompanied by a carefully prepared statement concerning the history of its donor, together with a microscopic study. Series of cases reported should be accompanied by a detailed description of the tissues used as fundaments. It will be evident from such data that there is a great difference as to the reliability of different tissues. It will also materially aid in standardizing the technic and value of the test (Table 2).

Providence determined circumstances leading to the possession of the first cancer-tissue used in my research work. The results obtained with this tissue were very gratifying, and the reactions were cleaner-cut, giving a distinctly lower percentage of possible errors than some tissue I have been obliged to use since. This tissue was a lymphosarcoma of the cervical and retroperitoneal glands. The all-cancerous nature of this material determined its value. A careful study of the accompanying tables will readily demonstrate the most desirable histopathologic requirements of the prime fundament. Combinations between prime and secondary fundaments suggest the possibility of being able to roughly locate a malignant invasion (Lindig, Kabanow). Varying the combination formulas of fundaments in reexaminations is of distinct advantage in suspiciously malignant investigations (Table 2).

I fully realize the fact that the histories tabulated as confirming the accuracy of the test are in some ways possibly unreliable. I have, however, endeavored to so use only such cases as gave very definite clinical manifestations, or those in which the cause of death was due unmistakably to the effects of a malignant disease. I readily appreciate that the only absolute solution of the problem is the number of malignant cases examined that give a positive reaction in which a microscopic diagnosis is able to verify the validity of the reaction. There will be, however, a border-line class of cases giving the reaction in which pathologists may differ, owing to the presence of a positive reaction in very early malignant cases, microscopically not well defined.

SUMMARY AND CONCLUSIONS

1. Keep carefully prepared histories of all cases examined.

2. There should be a follow-up interest, especially in such cases as gave a positive reaction, not clinically malignant at the time of making the test.

3. Care in selection of fundaments should be observed, keeping a carefully prepared statement concerning their donor, with a microscopic study of each.

4. Varied association of data pertaining to patient and fundaments, with reaction obtained, is essential.

5. Reexaminations in determining the progress of the disease are of especial value.

6. As yet the test cannot be considered as strictly specific for the diagnosis of cancer.

7. A positive reaction, however, should receive careful consideration before calling it erroneous.

AUTHOR'S TECHNIC

My technic is given in detail, that the reliability of my work may be judged accordingly.

Only distilled water, distilled at the time of making the test, was used, except in a very few instances in the very first of my work. All glassware is carefully washed, drained, and rinsed with alcohol, followed by ether; it is then sterilized by dry heat. The entire work has been done in a room never used for bacteriopathologic work. All apparatus is reserved exclusively for this work. I have used a few of the 579 Schleicher and Schüll thimbles, but practically all of my work was done using the 579A thimbles, selected as follows:

The thimbles were first well soaked in cold water, then boiled for five minutes. When cool, they were placed on the inner end of the funnel-form stopper of my dialyzing chamber. This was done at first with bare, well-washed hands, but now I use rubber gloves entirely and handle the thimbles as little as possible, rinsing with sterile distilled water before replacing in my dialyzing outfit, previously filled with 15 or 20 c.c. of distilled water. Cotton plugs were placed and then the entire outfit was sterilized by steam heat. No part of the remaining technic allows of the possibility of contamination of the outer wall, or surrounding sterile distilled water. Chloroform and toluene were added through the side tube provided for this purpose. Sufficient toluene was used to overlie the surface thoroughly. The apparatus was then ready to receive the materials intended for dialysis. New thimbles were filled with 5 c.c. of a 1 per cent. silk peptone (Hoechst) solution, covered with 10 drops of toluene, placed in an electrical incubator for from fourteen to sixteen hours. After removal from the incubator, 5 c.c. of the diffusate were tested with 0.2 c.c. of a 1 per cent. ninhydrin solution. Only those thimbles giving a corresponding *faint* shade of blue color were reserved for further examination.

The reserved thimbles were then run, first with 5 c.c. of a 10 per cent. solution of egg albumin, and if any were found to give the ninhydrin reaction they were immediately discarded. By selecting only such thimbles as give a faint blue ninhydrin reaction in the first test, seldom one is found that is permeable to the albumins. New thimbles are never used in an actual test until they have been run at least twice with human serum and test negative, 5 c.c. of diffusate to 0.2 c.c. of a 1 per cent. solution of ninhydrin; examination is run in duplicate with a previously tested and satisfactory set of thimbles and the new thimbles judged accordingly.

I have always selected thimbles in groups of four, notching the top with one to four notches, and punching in the side just below the notches one or more holes; in any set of four, each has the same hole-punch as one 0 to four 0; or one 000 to four 000. Each set of thimbles is placed in a wide-mouthed container, of 120 c.c. capacity. The bottle was then filled with distilled water and the whole placed in a steam sterilizer for one-half hour. After removal and cooling, 1 c.c. of chloroform was added, and the surface of the chloroform-water was well covered with toluene. The cork stopper was put in place and the thimbles then set away in the ice-box, kept at a temperature of about 8 C. (46.4 F.). Control experiments demonstrate that only the thimbles barely permeable to the silk peptone solution are suitable for the cancer-test as cancer-tissue is quite readily broken down by the "protective ferment" in the dialyzing thimble.

Preparation of tissue, selected as previously suggested, must be complete in the removal of all traces of blood and

the saving of only that portion of the cancerous material that contains the smallest amount of near-normal tissue invaded. Such tissue is cut up into small pieces about the size of a pea, well washed, and then thrown into a large volume of boiling water, 10 parts by volume, containing 1 or 2 drops of glacial acetic acid, and allowed to boil for just five minutes. The tissue is then drained of its boiling water and again similarly boiled except that no acetic acid is used. The boiling is repeated in this manner for from three to six boilings, until the boiling-water gives not the slightest reaction with ninhydrin, using 1 c.c. of a 1 per cent. solution of ninhydrin to 5 c.c. of the liquor. Any tissue requiring more than five or six boilings is discarded. After the tissue has tested negative to ninhydrin, by boiling in bulk, the tissue is then placed in small quantities—about 15 gm.—in a 60-c.c. Erlenmayer flask, and again boiled. After the contents of the flask have cooled, chloroform is added, and the whole covered with toluene, the mouth of the flask is plugged with cotton, and the tissue thus placed in the ice-box in the water in which it was last boiled. Whenever tissue is removed for use, the remaining tissue is similarly treated.

At least 30 c.c. of blood should be taken from the patient, either by venipuncture or actual bloodletting under strict aseptic precautions, and always using only dry glassware. The blood is usually collected by using a modified Jellinghaus-Losee outfit. Constant rigidity should be maintained in using only blood obtained before the morning meal, or if the blood has to be taken in the late afternoon, the patient should present himself without having eaten dinner; not even a lunch is allowed. The blood is allowed to stand at room temperature in the collecting outfit until the serum separates, which varies from three to twelve hours—usually four to six hours sufficing. Accordingly, blood collected at 8 o'clock in the morning is usually ready for setting up in the afternoon; that collected in late afternoon is ready next morning, but should be kept in an ice-box over night.

During the time that the blood is separating, apparatus required for the test should be made ready; and the fundaments to be used should be reboiled and made to test negative to ninhydrin, using 1 c.c. of a 1 per cent. solution to 5 c.c. of the boiling water. In reboiling the tissue, care should be taken to use ten times by volume the amount of distilled water as tissue to be prepared.

The separated serum is pipetted off from the collecting outfit into a centrifuge tube, and centrifuged at *high* speed until the serum is perfectly clear, and free from any reddish tint or cloudy appearance. One and one-half c.c. of such serum is placed at once in a small test-tube in the water-bath, maintained at a temperature of 56 C. (132.8 F.), for the purpose of inactivating this amount of serum, which is to be used as a control along with the prime fundament to be used with the untreated serum. At the same time that the serum is being inactivated, the dialyzing outfits as described in a previous article are sterilizing. After the outfit has been sterilized and cooled, chloroform is added through the side tube and then sufficient toluene to cover thoroughly the sterile, distilled water surrounding the sterile thimble free from all possibility of outside contamination due to the special construction of this apparatus. Each dialyzing outfit is labeled and the formula made up of various fundaments to be used, writing on the label the particular fundament and the amount of serum that each outfit is to receive. Then a small piece, from 0.5 to 1 gm., is dropped through the funnel-form stopper supporting the dialyzing thimble on its inner end, in spaced relation to the wall of the outer container. One c.c. of serum is then added to each (formerly used 1.5 c.c.) except to the one to receive the inactivated serum. After placing the serum, 10 drops of toluene are added, replacing the cotton plug, at which time the entire set is ready for the incubator. They are placed in an electrical incubator, at 37 C. (98.6 F.). Abderhalden specifies in the pregnancy test that dialysis should go on for from fourteen to sixteen hours; experience with his technic in the cancer test indicates that a shorter period, about twelve hours, gives better differentiation of color reactions, and so, better satisfaction.

After removal from the incubator, the funnel-form stopper supporting its dialyzing thimble and contents is removed. Five c.c. of the dialysate is placed in a calibrated test-tube, to which is added 0.1 c.c. of a 1 per cent. solution of ninhydrin. The test-tube with its contents is then boiled with its fellow in an electrical heating device so constructed that a definite, constant and predetermined heat is applied, boiling the contents of the test-tubes for exactly one minute (author's electric test-tube heater). By thus boiling the dialysates with ninhydrin, the ratio of evaporation is constant for each. After cooling for one-half hour, interpretations are made by the color reactions obtained. If the test has gone on satisfactorily, negative reactions will be apparent by the entire absence of any color in the contents of its test-tube. Positive reactions will manifest themselves by a distinct, usually not too deep, bluish-purple color in the contents of the test-tube. Such reactions are easy of interpretation as to reactions obtained. The association of all the reactions obtained, together with the particular formula for the test, is necessary for the making of a diagnosis. My most frequently used formula for a set of four thimbles is the following:

One thimble containing the prime fundament and untreated serum; one thimble containing the prime fundament and inactivated serum; one thimble with either serum or fundament alone, as might be indicated by a suspicion as to the reliability of either one or the other; the fourth thimble contains the secondary fundament, common to any particular series of studies. Invariably my secondary fundament has been a placental protein. In a few instances I have also used muscle-tissue, brain-cortex, and thyroid gland. When the interpretation of the test depends on the meaning of various shades of color reactions, it cannot be considered in any other way than unsatisfactory, and indicates the necessity for a reexamination. Whenever possible, controls should be run using the same formula either with a known normal or malignant. The larger number of my cases were run with a known control, but this was not invariable.

Gryphon Block.

A STUDY OF THE FERMENT ACTIVITY OF THE BLOOD-SERUM

DURING PREGNANCY AND UNDER NORMAL AND PATHOLOGIC CONDITIONS *

FREDERICK HOWARD FALLS, S.B., M.D.
Research Fellow in Obstetrics, University of Illinois
CHICAGO

A large amount of work has been done with the Abderhalden test, using the dialysis method. Almost diametrically opposite conclusions have been arrived at by the various workers in this field. L. Flatow,[1] using an acetic acid coagulation method, and neutralizing with calcium oxalate, found that all serum has the power of digesting placenta. H. Kämmerer, M. Clausz and K. Dieterich[2] found that serum of non-pregnant individuals sometimes reacted positively, and that the serum from known pregnant individuals sometimes reacted negatively. Sunde,[3] in eighty-three cases, found that the test corresponded to the clinical diagnosis in seventy-five cases; and that eight non-pregnant cases gave a positive reaction.

Stoekel[4] believes that the proof of the specificity of the reaction is still lacking. He thinks that it, at

* From the Department of Research Medicine, University of Illinois, Chicago.

* Read before the Section on Pathology and Physiology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Flatow, L.: München. med. Wchnschr., 1914, lxi, No. 9.
2. Kämmerer, H., Clausz, M., and Dieterich, K.: München. med. Wchnschr., 1914, No. 9.
3. Sunde: Norsk. Mag. f. Laegevidensk., 1913, lxxiv, 1234.
4. Stoekel: München. med. Wchnschr., 1913, No. 9.

present, is of little significance for general practice or forensic medicine. A. K. Pain,[5] on the other hand, feels that with good laboratory technic the test is the most accurate of the present-day methods of diagnosis and ranks with the Wassermann and Widal tests. Williamson[6] found that in twenty known pregnant cases the reaction was positive in all; while in thirty known non-pregnant cases the results were uniformly negative. In sixteen unknown cases, however, the reaction was wrong in two and doubtful in two. In other words, the reaction was of no value in the diagnosis of 25 per cent. of the unknown cases. Oller and Stephan[7] conclude that, while pregnant serum contains proteolytic ferment that can be demonstrated by the Abderhalden dialysis method, the reaction is of little clinical value, because a relatively large number of non-pregnants likewise give the reaction. They mention Lichtenstein, Rubsamen, A. Mayer, Tschudowsy, Gambaroff, Stange and Aschner as supporting Abderhalden claims, but point out the fact that these investigators rarely show controls with normal serum or, what is of more importance, with serum from pathologic cases. Also that Aschner gets 30.5 per cent. positive reactions in non-pregnant cases. Mühsam, Hies and Lederer, Werner and Wininwarter consider the reaction as entirely untrustworthy. Noncommital are Schafer, Ebeler and Lohnsberg, who report positive reactions in 12.5 per cent. of non-pregnant cases, Frank and Heiman, Frank and Rosenthal, Kohler and Deutsch.

E. Schiff[8] concludes that the test is entirely reliable, but he gives no details as to his technic or controls. He admits getting seven weak positive tests and controls in thirty-six non-pregnant cases. Schwarz[9] found forty-one known pregnants who gave a positive test, while thirty known non-pregnant cases gave a negative reaction. The latter cases included fibroids, pus-tubes, carcinoma and a few male patients. Jellinghaus and Losee[10] do not deny the defensive ferment theory, but feel that the dialization method is not always correct in non-pregnant cases. They therefore do not recommend the test for diagnostic purposes, because errors in technic, responsible for poor diagnosis, cannot be found till after the test. Williams and Pierce[11] conclude that there is an increase of ferment in the blood during pregnancy, but that the ferment is not specific—a similar increase having been noted in other conditions.

Much of the work reported has been done with modifications of the original Abderhalden technic, which renders it totally unfit for comparison either with the original Abderhalden work or with that of other men who used Abderhalden's technic. Many men reported work, without giving detailed account of their technic and control experiments. Such work is of no possible value, and merely serves to increase the confusion that exists regarding the use of the Abderhalden test as a valuable addition to our diagnostic methods in obscure cases.

This work was undertaken to determine:

1. Whether there is a ferment constantly present in the blood of pregnant women that can be demonstrated by means of the Abderhalden dialysis method.

2. Under identical conditions does blood, normal or pathologic, contain a similar ferment which might give the same reaction?

3. If blood, from non-pregnant individuals, gives this reaction, what conditions are most likely to lead to a wrong conclusion when doing the test in a case of suspected pregnancy?

4. Will a quantitative estimate of the strength of the reaction assist in differentiating pregnancy from other conditions that might give a positive reaction?

In undertaking this work it was decided to follow Abderhalden's technic.[12] About thirty cases, pregnant and non-pregnant, were tested, in order to become familiar with the technic, and to be able to avoid the inevitable mistakes of the beginner. These results were not recorded.

In my opinion, at present at least, in order that the results may have a more uniform comparison, all Abderhalden tests should be made according to Abderhalden's technic. Only in this way can a sufficient number of tests be made to permit us to draw warranted conclusions as to the clinical value of the test. Various modifications, at the present state of our knowledge, merely serve to add to the confusion without throwing any real light on the subject.

THE ABDERHALDEN TECHNIC

The technic used in this work is here briefly described:

Preparation of the Placenta.—I was present at the delivery of the placenta and received it immediately after brief examination by the accoucheur. The amnion and cord were hurriedly removed with a scissors, and all large blood-clots washed away. It was then quickly cut into pieces the size of a hazelnut and washed continuously in cold water, with frequent changes and continuous squeezing with the hands till all blood was removed from the pieces. The tissue then looked white, and any pieces containing the faintest tinge of pink were discarded. The washing usually took about two and a half to three hours. The tissue was next transferred to a pan, containing about 1 liter of boiling water, and boiled for five minutes. The tissue was removed, rinsed and pressed repeatedly, and the five-minute boiling repeated. This was continued until 5 c.c. of the filtrate, after boiling the tissue with five times the amount of water, failed to give a reaction with 1 c.c. of ninhydrin on boiling one minute. The tissue had to be boiled and rinsed at least six times; and with some placenta eight and ten boilings were necessary. It was found that some placenta could not be freed from substances that reacted with ninhydrin; and these after repeated boiling had to be thrown away. After the filtrate from the boiling showed absolutely no color on boiling with ninhydrin, the tissue was placed in colored glass jars with chloroform, under toluene. It was reboiled three times and tested with 1 c.c. of a 1 per cent. solution of ninhydrin before each test.

Method of Obtaining Serum.—The blood was taken from the median basilic vein, by means of a clean, dry Luer syringe, and transferred at once to a clean sterile centrifuge tube. It was allowed to stand from three to twelve hours till the clot began to separate and press out the serum. It was then centrifuged at about 1,600 revolutions for four to five minutes. The clear serum was pipetted off, care being taken to avoid the formed elements. Hemolized blood was discarded at this juncture to avoid errors in reading the test, due to the ferment set free by hemolysis; 1.5 c.c. of the clear serum was inactivated in the water bath, at 60 C. (140 F.) for one hour and used as a control. In the later experiments 1 c.c. of serum was used according to later advices from Abderhalden.[13] An equal amount of the clear serum was used for the test.

5. Pain, A. K.: Boston Med. and Surg. Jour., 1914, clxx, 303.
6. Williamson: Jour. Obst. and Gyn. Brit. Emp., 1913, xxiv, 211.
7. Oller and Stephan: München. med. Wchnschr., 1914, lxi, Nos. 1 and 2.
8. Schiff, E.: München med. Wchnschr., 1914, lxi, No. 14.
9. Schwarz: Am. Jour. Obst., 1914, lxix, No. 1.
10. Jellinghaus and Losee: Am. Jour Obst., 1914, lxix, No. 4.
11. Williams and Pierce: Surg., Gynec. and Obst., 1913, xvi, 411.
12. Described in Beitr. z. Klin. d. Infectionskrankh. u. Immunitätsforsch.
13. Abderhalden: München. med. Wchnschr., 1914, lxi, No. 8.

The Diffusion Tubes.—Schleicher and Schüll 579 dialyzing tubes were used. These were first tested with albumin to insure their impermeability to it. Any tubes found to let through albumin were discarded. The remaining tubes were tested with a 1 per cent. solution of silk peptone from Hoechst Farbwerke von Meister Lucius and Bruning. These tubes that let through the peptone solution at the same rate, as measured by the depth of color on boiling 10 c.c. of the diffusate with 2/10 c.c. of a 1 per cent. ninhydrin solution, were reserved for future use in making the test. The remaining tubes were discarded. After testing with peptone solution, the tubes were allowed to stand in a liter of distilled water for twenty-four hours in order to remove all peptone solution that might remain in the tube wall. They were then boiled for about two minutes, and stored under toluene in distilled water. They were reboiled for about one minute just before each test.

The Test.—One c.c. of clear serum was introduced into the diffusion tube, together with 1 gm. of placenta protein. Care was taken that all placenta protein was below the surface of the serum to prevent error from decomposition of pieces, adhering to the sides of the dialyzer, and so not covered by the toluene. The outside of the parchment was carefully washed off with distilled water. The diffusion tube was next placed in a large test-tube, containing 20 c.c. of sterile distilled water. A layer of toluene was placed within and without the dialyzing membrane to prevent the growth of bacteria and to prevent evaporation.

The Controls.—The controls, with the exception of the first twenty-five to thirty cases, were made exactly the same as the test, excepting that the serum added had been inactivated at 60 C. for one hour. In the first cases the serum alone, without the placenta, and not inactivated, was run as a control. The importance of running an inactivated serum control and placenta is that a negative result obtained thus must mean that there are no dialyzable substances in the serum, and that the placenta itself is not the source of the dialyzable substances, and hence must have been properly prepared. The controls were found to be uniformly negative in this series, which, to my mind, is the strongest point in favor of proper technic. In many cases the tubes used as "test-tubes" on one day were used as "control-tubes" on the succeeding day in order to detect leakage of albumin that might occur after a tube had been used several times. Bacteriologic examination was made of the content of the diffusion tubes in cases in which an unexpected positive reaction occurred, in order to rule out the possibility of the digestion products being due to bacterial decomposition. In no case was more than an occasional organism found.

Dialyzation.—The period of incubation in the first twenty-five to thirty cases was sixteen hours, according to Abderhalden's original suggestion; later it was increased to twenty or twenty-four hours because difficulty was experienced in getting strong enough reactions in the positive cases to admit of a definite conclusion as to whether the test was positive or negative. Abderhalden,[13] later, has advised the same modification of his technic. Ten c.c. of the diffusate from the test- and control-tubes were boiled with 0.2 c.c. of a 1 per cent. solution of ninhydrin. Test and control were boiled over the same flame with the same amount of ninhydrin and as near as possible at the same rate. They were read in all cases after standing one-half hour. All glassware used in the tests was cleaned by allowing to stand over night in potassium dichromate and sulphuric acid, removed, rinsed, and placed in strong potassium hydroxid solution, rinsed in tap-water and then in distilled water, and dried. This was also attended to personally, in order to obviate errors in testing, due to traces of acid or alkali in the tubes.

FINDINGS

Clinical Material Examined.—In all 145 cases were examined.

Pregnancy Cases Examined.—Twenty-nine cases were examined. Most of these were known pregnants at the time of examination and the majority were seven months pregnant or more. Two cases gave negative reactions. One of these tests, an unknown in the twelfth week after menstruation, was made while using the sixteen-hour incubation period; and the error might have been due to the fact that the reaction was so weak that it could not be read. The other was an obscure case in which the uterus was enlarged to the size of a six months' pregnancy but no fetal heart-tones could be heard, nor could fetal movements be felt, or fetal outlines be mapped out accurately. The Roentgen ray revealed a shadow of the fetal head above the brim of the pelvis, and the shadowy outline of the vertebral column. The fetus might have been dead, and the reaction negative on that account. I have not had an opportunity to study a case in which the fetus was dead, and do not know how the reaction results under such conditions. The positive reactions varied from very weak to very strong positives. There seemed to be no way of telling which cases would give a weak, and which cases a strong reaction. On the whole, cases from four to six months appeared to give the strongest reactions. Ten cases reacted positively, and six were weakly positive, leaving eleven that reacted strongly positively.

Puerperal Cases.—Twelve cases were examined, varying in time from just after the completion of the third stage of labor, to five months after an abortion. One case gave a strong positive, five gave a positive and six a weak or very faint positive reaction.

Lobar Pneumonia.—Nineteen cases of lobar pneumonia were investigated. The reaction was negative in only two cases and in one of these dialyzation proceeded only sixteen hours and a negative result might be attributed to that. The other was a case in the third day of the disease. On the whole, the five cases examined before the crisis gave considerable weaker reactions than those examined just after the crisis.

Acute Rheumatic Fever.—Having in mind the close relationship of the causative organisms of pneumonia and rheumatism, it was decided to test out the proteolytic power of the serum in the latter disease, as well as in the former. Eight cases in all, including acute and convalescing cases, were examined. The reaction proved negative in one out of the eight tests. One test gave a strong positive. The other six gave a weak or very weak positive test.

Typhoid Fever.—Five cases were examined, varying from the second to the sixth week. The reactions varied from a faint trace to a weak positive in all cases, and were apparently more marked later in the course of the disease.

Tuberculosis.—This was next investigated. Six cases were examined, all in advanced stages of pulmonary tuberculosis, according to the clinical diagnosis. One of these gave a negative result, the other five a weak positive or a positive reaction.

Nephritis.—Eleven cases of nephritis were examined. They were mostly of the chronic interstitial type. Nine gave a positive reaction, two, weakly positive and one a negative reaction. Two cases at the verge of uremic coma gave strong positive reactions.

Carcinoma.—Eight cases were examined: six carcinoma of the uterus, one carcinoma of the stomach and one carcinoma of the bladder. Two negative reactions were obtained, two were positive and four weakly positive. There seems to be little, if any, relation between the extent of the carcinomatous involvement and the strength of the reaction.

Meningitis.—Five cases of meningitis were examined. These included two epidemic, one syphilitic and

two tuberculous forms. The reaction was negative in the syphilitic, one of the tuberculous and one of the epidemic forms. The other tuberculous and epidemic cases gave a faintly positive reaction.

Diabetes.—Five cases of diabetes mellitus were examined, in various stages of the disease. One gave a negative reaction, two a faint positive, one strong positive and one medium positive.

Fibroids.—Four cases were examined. Two were negative, one gave a very faint reaction and one a positive reaction. In the latter case sufficient time had not elapsed since the test absolutely to rule out the possibility of a pregnancy being coexistent.

Blood and Nervous Diseases.—Under this head are considered two cases of pernicious anemia, which gave weak positive reactions; one splenomyelogenous leukemia, which gave a strong positive reaction; one malarial infection, a few hours after the chill, which gave a strong positive test. One case of hypopituitarism gave a faint trace. One case of head tetanus, in the seventh day of the disease, gave a weak positive. One dementia praecox gave a trace. One case of scurvy in the convalescent stage gave a negative reaction. Three cases of syphilis were examined, all in the latent stages; two were found positive and one strongly positive. One alcoholic neuritis was strongly positive.

Normal Cases.—Seventeen normal or patients suffering from minor affection, not giving systemic reactions, were examined. Thirteen gave negative tests and four were positive. Of the latter, one had had a light meal one hour before the test, one was a case of chronic constipation, two were hernia cases just before operation, and it is possible that these patients might have eaten more than they admitted.

One case of suspected chorio-epithelioma was examined. The woman had passed a hydatid mole one year previous. She had flowed on and off ever since. The Abderhalden test was positive, but scrapings from the uterus failed to show malignant changes or evidence of recent pregnancy.

SUMMARY

From the results it would seem that there is a ferment present in the blood of pregnant and puerperal women in the vast majority of cases, and that it can be demonstrated by the Abderhalden dialysis method.

Under the same conditions normal blood sometimes, and blood from various pathologic conditions frequently, gave the same reaction. The strength of the reaction varied, with some exceptions, with the disease present in the case examined.

A large number of pathologic conditions may give a positive reaction; and hence would have to be ruled out when applying the test to a given individual for the diagnosis of pregnancy.

Quantitative estimation of the strength of the reaction is of little value in differentiating pregnancy from other conditions that give a positive reaction.

Abderhalden[14] states his position very definitely on the reaction in non-pregnant individuals. He says:

> The serums from gravid and non-gravid individuals differ from each other, among other things, in that the serum of the former contains a ferment that will digest placenta protein. This statement holds at least for normal non-gravidae. According to my experience and that of many other investigators this statement holds for pathologic non-pregnant cases also.

14. Abderhalden and Fodor: München. med. Wchnschr., 1914, lxi, No. 14.

I have been unable, however, to find any data by him of a systematic investigation of other pathologic conditions using the same technic as used in the pregnancy test.

From these results it appears to me that the best working hypothesis to explain the phenomena noted here is the following:

In many conditions of altered metabolism, whether due to infection, malignant disease, pregnancy, the involution period of the puerperium, kidney lesions or certain nervous diseases, there is an abnormal amount of ferment in the blood. This may be due to:

A. Absorption of ferment by the blood from some source in the body, where a great amount of ferment activity is going on. Six such sources may be recognized by this work:

1. In pneumonia, especially after the crisis, when the lobes of the lung are undergoing resolution.

2. In pregnancy when there is a constant transfer of nutritive material from the mother to the fetus, and of waste material from the fetus to the mother, and the whole process carried on by anabolic and catabolic ferments in the chorionic cells. It is easy to structure so rich in ferment as the placenta.

3. In carcinoma, in which apparently abnormal ferment activity is going on in a poorly defined mass of tissue, invading and breaking down other tissue.

4. At the height of digestion, at which time there is absorption of the products of digestion and a large amount of fluid containing an immense amount of ferment is bathing the surface of a rapidly absorbing membrane. Were the positive Abderhalden tests when the serum is obtained at the height of digestion due to amino-acid content of the blood at the height of digestion, I fail to see why the inactivated serum would not contain just as many dialyzable substances as the active serum and therefore the control give the same color reaction as the test.

5. In malaria, when there is, at the time of the chill, a great destruction of red cells with the setting free of ferment.

6. In splenomyelogenous leukemia, in which there is a great increase in the formation of and destruction of white cells and destruction of the red cells.

B. In the acute infections recovery is probably due to the mobilization of the ferments by the body-cells, which either prevent the development of the bacteria or actually digest them and their toxins. Tuberculosis being in the advanced stages, almost always associated with secondary infection, might be considered as coming under the same heading as acute infectious diseases.

The reason for the reaction in diabetes is less apparent, but with the altered functions of the pancreas one might expect to find various disturbances in the tryptic or antitryptic power of the blood.

The positive reaction in chronic nephritis is not so easy to explain by this theory, but it is known that there is profound alteration in protein metabolism, which is essentially carried on by proteolytic ferments; and therefore it would not be surprising to find an abnormal amount of these in the blood-stream.

These points are merely mentioned here, and are not to be regarded as definite conclusions. It is my wish to go deeper into the subject, to see a wider range of diseases, and to examine more cases from each before trying to formulate definite conclusions. It is hoped that other workers will investigate along similar lines; and that such investigations will enrich

our knowledge of the underlying principles of physiology and pathology.

I wish to express my thanks to the resident and attending staffs of the Cook County Hospital for access to the clinical material, without which this work would have been impossible. Also to Drs. D. J. Davis and C. S. Bacon for timely suggestions and helps throughout the work.

2800 Washington Boulevard.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BALL AND FALLS

Dr. Charles Goodman, New York: I have transplanted kidneys and thyroids in dogs, and while the autotransplants were successful, my homotransplantations were followed by autolysis; this occurred although I was able by special technic to overcome the tendency to physical injury observed in the transplant during the stage of vasomotor paralysis. I have used the Abderhalden method in determining the specific ferments in the blood. I found, in a series of fourteen cases of transplantation of the thyroid gland, that, in nine instances, a ferment could be isolated by the dialysis test which was capable of digesting suprarenal tissue. I intend to determine by the Abderhalden method what other organs are susceptible to vital insult following homotransplantation.

Dr. M. G. Wohl, Philadelphia: I have applied the Abderhalden test in cases of pregnancy and carcinoma but chiefly in nervous diseases. My material was obtained from the Philadelphia General Hospital, the epileptic colony of Spring City, and from wards of the Samaritan Hospital. The technic was followed closely in all details as laid down by Abderhalden. In twenty-two cases of pregnancy I found the test positive. The patients varied in term from three to nine months. Cases of toxemia of pregnancy gave surprising results. In one case of eclampsia, placenta gave a faint rosy color and liver tissue strongly positive. Three patients with pernicious vomiting gave the same faint reaction with placenta, and moderate violet with liver. I applied this reaction in cases of dementia praecox and epilepsy at various times, between the attacks, etc., and in some cases I have been fortunate enough to obtain the blood five minutes after the attack, and I find that if the technic is correct in all details, we get uniform results. In cases of dementia, and epilepsy which advanced to dementia, I have obtained a positive reaction with brain and testicular tissues if the serums were taken from males; and with brain and ovarian tissues with serums from female patients. Dr. Falls obtained a positive reaction with placenta in some cases of dementia. I recall a similar case of positive reaction with placenta in an epileptic male, 17 years old. When I obtained this reaction, I went over my technic again and was convinced that there was no error in it. After careful investigation I found that a day and a half before the blood was taken the patient had suffered an injury of his arm. This gave me the clue to the situation. As you know, through hemolysis of blood-corpuscles, a ferment is liberated which is non-specific and this non-specific ferment was very likely responsible for the cleavage of the placenta. The reason for obtaining negative reactions from inactivated serums taken soon after a meal, which according to Dr. Falls should be positive, is the fact that the amino-acids present in the blood after a meal are easily diffusible and are found in the circulation in such small quantities that they would hardly give a positive reaction with the ninhydrin.

Dr. C. P. McCord, Detroit: I began working with this test in the fall of 1912 and since that time have performed nearly two thousand tests. These have been in part clinical and in part laboratory tests. They have been distributed over pregnancy, tuberculosis, goiter, cancer, a few cases of syphilis and laboratory experiments with organ-tissues to determine the specificity of organ-proteins. This work when performed with proper regard for the intricacies of the technic has yielded results corresponding to the clinical condition in a high percentage of cases. Proper regard for the technic presupposes careful testing of the parchment thimbles so that they are of known accuracy. These should never be actually boiled but merely brought up to the boiling point. Further, these thimbles should be allowed to cool before using, for if serum is placed in heat-expanded thimbles, the serum passes into the spaces in the parchment and, when the thimble cools off and contracts, the serum may be forced to the outside of the thimble and thus vitiate the tests. I have used this test in a few cases of carcinoma of the thyroid in dogs. I find that serum from dogs with cancer of the thyroid reacts not only with carcinomatous thyroid gland but with normal thyroid tissue as well. This is to be expected, for carcinoma retains some of the characteristics of the cells from which it develops. The intensity of the color reaction with normal thyroid tissue was much less than with carcinomatous thyroid. Moreover, when the serum from these animals was tested with tissue from other organs, for instance, kidney or ovary, positive tests were obtained. Although the serum alone is in many instances dialyzable, the serum plus any organ tissue yields a positive reaction of greater intensity than the serum alone, but of less intensity than the serum plus cancer thyroid tissue. This I consider very plausible. While I believe that the parenchymatous proteins of an organ are specific, I also believe that the connective-tissue stroma of the organs is non-specific. In destructive lesions of organs such as the thyroid cancer, the stroma may be altered as well as the parenchyma and non-specific as well as specific ferments arise. These are capable of digesting the non-specific parts of other organs. I believe that herein is a method that is very useful within certain limitations. The method is not infallible. After the technic was carefully controlled, 5 per cent. of my cases gave erroneous results. There are certain natural limitations. For instance, in 140 cases of tuberculosis (these I have carried out collaborating with Dr. Lockwood), 25 cases in the cavity stage were uniformly negative. Apparently the serum in this stage contains no protective enzymes. Withal, I think this a useful method in diagnosis and likely to prove helpful.

Prof. A. J. Carlson, Chicago: The explanation offered by Dr. Falls of the positive reactions in non-pregnant cases is probably the correct one. I do not believe that the position taken by Abderhalden, namely, that normal blood is free from polyvalent proteolytic enzymes, is tenable. The Abderhalden test must therefore be a quantative one, and unless the test can be made a quantitative one, it will be of limited value. I dare say the qualitative test would be positive in 100 per cent. of normal cases if the time of digestion is extended. We have polyvalent ferments in the blood of normal animals and any condition which involves a rapid impairment of the tissues leads generally to liberation of an increased amount of ferments into the blood. Hence, a greater digestion in certain diseases. Abderhalden has done a very great service for biology and medicine by this extension of the anaphylaxis and immunity phenomena, but I think some workers have been led astray by his view that normal blood is free from non-specific or polyvalent enzymes. Furthermore, the Abderhalden test depends, of course, on a reaction to proteins similar to that to antigens in immunity, and the intensity of the immunitary reaction varies greatly in different individuals.

Dr. C. F. Ball, Rutland, Vt.: The technic described by Dr. Falls is practically mine. My own, however, has been the half method of Schwartz instead of the 10 c.c. of Abderhalden. I have guarded that by using 0.2 c.c. of ninhydrin to 5 c.c. of my solution instead of the usual quantity of ninhydrin, which would give me an error if I were to get one, more readily than using 0.1 c.c. All of my tissue has been properly prepared, as has been suggested, and when I can't get it clean by half a dozen boilings, using 1 c.c. of the ninhydrin to 5 c.c. of the boiling water, I throw it away as useless. The time I have taken in preparing my tissue, as has been stated, is anywhere from one to two hours, depending on the tissue. I have prepared tissue and have boiled it a dozen times and couldn't get it satisfactory. I have also

boiled tissue a dozen times and got it apparently satisfactory and when used it would give treacherous reactions and I would have to throw it away. I never have used tissue until I have run it as a control with a known condition and tried out fundaments at least two or three times before I depended on it for new work. At first I used water distilled at the time of making the test, but in the latter part of my work I have used water distilled at or near the time of making the test and then boiled. Normal tissue of the gland invaded would be expected to give a reaction along with the malignant tissue used, as Dr. McCord has found. In a sarcoma of the thyroid normal thyroid tissue used also showed the reaction. The quantitative determination, spoken of by Dr. Carlson, is to be hoped for. When we get the quantitative determination, we will then find that there is a difference in the amount of ferment produced by the apparently healthy or normal person afflicted with a malignant infection, as compared with the patient who has passed on to the latter stages of the disease in which the ferment is largely reduced, the system having given up the fight, which accounts, I think, in a few reported cases, for the lack of a positive reaction in grave malignant cases just prior to death.

DR. F. H. FALLS, Chicago: I think Dr. Ball is wrong. Abderhalden uses 5 c.c. instead of 10—that is the technic I have been following—5 c.c. of the filtrate of the boiled water plus placenta. In the few toxemic cases that I have examined, I found, as Dr. Wohl did, a weakness of the reaction. One patient with puerperal insanity which developed about four or five days after the delivery was examined. She gave a very weak positive reaction. That might have been due to the fact that in the puerperal state the reaction is usually weakened. I don't know. I have had no chance to examine any epileptic cases. Did Dr. Wohl use placenta as substrate in his epileptic cases? I think there is some slight misunderstanding about my statement of the amino-acid contained in the blood giving a positive Abderhalden reaction. My position is this: If the blood is taken at the height of digestion in an Abderhalden test, and 1 c.c. of inactivated serum and 1 c.c. of active serum are put in separate dialyzation thimbles, with the same amount of protein in each thimble, then if you get a positive reaction in your test and a negative reaction in your inactivated serum control, it cannot mean that the reaction is due to amino-acid in the serum. There must be ferment activity in the active serum test, and no ferment activity in the inactivated serum control. The criticism that I have heard, heretofore, has been that boiling renders the thimbles thicker and less permeable. Concerning Dr. McCord's point about cooling the thimbles, after boiling the protein was put into the thimble first and then the serum. The thimble had cooled to very nearly room temperature when the serum was introduced. My controls, which were uniformly negative, had the same amount of serum, and were handled in the same way.

Dr Carlson's idea of the quantitative estimation of the reaction is a very good one. Dr. Welcher and I, at the University of Illinois, tried to split up the placenta by various chemical methods in an endeavor to find a pure placenta protein which would react more delicately with the serum from pregnant women. We hoped to find a protein in the placenta for which the ferment would be specific. We were unable to do so. I believe that Dr. Ball's modification of using 5 c.c. of the diffusate in testing is wrong. This is a quantitative reaction, absolutely. I believe that we must all use the typical Abderhalden technic without modification and put down our results as we find them. That will soon tell us about the reliability of the test not with ten or a dozen cases, but with hundreds and thousands of cases. Then we will get results that will be reliable, and comparable. I do not wish to be misunderstood concerning the value of the test. I think that in any obscure case it would be valuable when there is a question of pregnancy. The point is this: If we can get a test that will be reliable in even 80 per cent. of cases, we have no right to disregard such a test, and say it is of no value. The Wassermann and other tests are far from infallible, but nevertheless valuable.

THE PHYSICIAN'S FIELD IN INFANT FEEDING*

HENRY DWIGHT CHAPIN, M.D.
NEW YORK

Within the past few years there has been a gradual change in the relation of the physician to his infant patients and also in the conception of what his duties are in connection with the feeding problem. Ideas of what constitute successful feeding also have undergone a change.

A great wave of interest in infants and children has been sweeping over the country, and everywhere civic agencies are at work to improve the care and nutrition of the infant population, but the training of many physicians has not fitted them readily to adjust themselves to the new conditions and naturally to take the leading part in this social work. The family physician, who assists at the birth and who is usually called on when anything goes wrong with the infant, is the one who should direct the nutrition of the infant when it is well, as well as when it is in an abnormal condition. He should thus familiarize himself with the principles and simple methods of managing the normal healthy infant as well as the disturbed infant he often sees.

The scientific training of physicians has been in the diseases and abnormalities of infants, as their services were not looked on as necessary until the infants were so ill, or the effects of bad management had become so pronounced, that the parents could see that something needed attention. The principles involved in the feeding and management of the growing infant must be in consonance with the general science of animal nutrition.

The enormous importance of meat production has caused experiments in animal nutrition and production to be carried on by highly trained scientists whose work has shed a flood of light on the practical problems of infant feeding. Their work has resulted in the teaching of the principles of animal nutrition in certain classes of high schools, in agricultural colleges, and in the domestic science courses for women. Physicians should be better acquainted with this work.

It has been too generally believed by physicians that when the digestion of an infant became normal and there was gain in weight, that their work was done and thereafter the infant would be properly nourished if it continued to gain in weight. But the extended experiments in modifying the structure and tissues of the animal body by different forms of food during the period of most active growth have shown this to be a mistaken belief. Gain in weight and proper nutrition do not necessarily go hand in hand. There may be gain in weight with poor nutrition on what the physician may have been led to believe is highly scientific food, and good physical development may result from the use of food the physician has been taught to believe is decidedly unscientific.

In the struggle for scientific feeding, technical methods of preparing food have often been allowed to overshadow the preparation of scientific food. Many times unscientific food has been prepared by highly scientific methods and used with poor results; while what really was scientific food, prepared by crude methods, has perhaps given results which were all that could be desired, to the perplexity and disgust

* Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

of the physician. It is of first importance, then, to be able to distinguish between elaborate and complicated methods of preparing food and scientific foods.

In all scientific investigations there must be care, system, and exactness so there can be no doubt about how the results were obtained; but in the search for scientific truth prodigious amounts of the most exact, painstaking work have been done, the only value of which has sometimes been to show that the truth was not found. Scientific work does not necessarily mean that the results will be scientific truth.

After a scientific principle has been discovered it is a waste of effort to employ in everyday work the tedious, exact, and often difficult methods of scientific research when equally good results can be had by simpler methods. Infant feeding is an applied science and in its application does not call for the methods of scientific research. The physician is called on only to apply in the best way he can, under existing circumstances, the scientific principles on which animal nutrition has been found to be based. He can originate his own methods and if they apply correct principles he will get as good results as if he used some other methods which were more complicated. Results justify any method that produces them.

Among the factors that have hindered a wider knowledge of the science of infant feeding among physicians has been the tendency to concentrate attention on a single point instead of viewing the subject broadly. At one time it was all bacteria; at another, all chemistry; again, feeding was to be mathematical, and finally there has been caloric feeding. While there is truth in all conceptions of feeding which have been proposed, the really essential thing has been largely overlooked, and that is that infant feeding is a matter of biology and must be governed by the broad laws of biology. Chemistry and physics are simply means to an end, and not the end itself, as has been too generally considered.

In dealing with chemistry and physics in living things, factors have to be taken into account which are not met with in the laboratory. For instance, it has been taught that food was taken into the cells by osmosis and the laboratory work on osmosis was accordingly considered final. But chemistry has undergone a revolution during the past few years, and Findlay[1] in lecturing on the new chemistry as applied to medical and biologic science, has called attention to the fact that it should be applied by the biologist who understands chemistry and physics and not by the chemist, because a membrane which in the laboratory will allow substances to pass through it in either direction by osmosis, when in the living body has the power of selection and will there allow water to go through in one direction and a salt in the other direction. It is this selective action of cells, membranes and tissues in the body that completely upsets chemistry as taught in the laboratory when applied without qualification to infant feeding, and it explains why one infant may select one form of food that another infant rejects.

The inability successfully to apply the chemistry of the laboratory directly to animals and plants has resulted in far reaching experiments to discover the principles on which successful animal nutrition is based. Not only have different foods been tried for restricted periods on adults, but different types of food have been tried during the growing period to determine what effect such diets would have on bodily development. So instructive has such work proven that it has been applied to groups of animals continuously through several generations to exclude effects of idiosyncrasies of individuals. As a result of such work there stands out prominently the fact that the chemical and caloric standards of feeding of the past are not final.[2] The differences in the vigor, weight, and strength of animals and their offspring, fed on different foods of supposedly the same chemical composition and yielding the same number of calories, are so striking as to have led to a warning not to place too much dependence on the caloric value of food, it having been found to be but a rough guide at the best.

Other experiments have great significance in connection with infant feeding. It is a well established fact that the milk of an animal has essentially the same composition and digestive properties regardless of its food and that no method of permanently altering the properties of milk through food has been discovered. Attempts have been made to develop the bones of a fetus by feeding the mother large quantities of bone-forming materials, but the mother's organism excluded these materials. After birth the same materials, mixed with food of the young animal, produced very strong and large bones.[3] It has long been known that colostrum differed from the later milk in its composition and in the digestive properties of its proteins, but it has only recently been discovered that the colostrum contains immunizing bodies protecting against streptococci, staphylococci and tubercle bacilli, which are not found in the later milk.[4] It appears, therefore, that the power of selection by the organism extends to picking out for the offspring just what it needs at each stage of its development and putting it into suitable form, and it is evident that the foods of young organisms are highly specialized. With this knowledge, how inadequate appear the theories of feeding that look on food as a mere mixture of protein, fats and carbohydrates, or as a source of calories?

The foods that are the mainstay of life and the sole bases of the various dishes of the cook, excepting meat and fish, are milk, eggs, cereals, and legumes. These substances are the specialized foods supplied by parents to their offspring during the formative period, when there is the greatest demand for protoplasm-forming materials.

All living things have protoplasm as a common basis and need the same elementary substances for the formation of protoplasm. Skeletons differ, however, and in plants they are mostly carbohydrates and silicates, while in animals they are largely carbonate or phosphate of lime. In examining the food for developing organisms—milk, eggs, cereals and legumes—it is found that milk and eggs in addition to protoplasm-forming substances contain materials for bone formation, while cereals and legumes contain large quantities of carbohydrates to form the skeletons of plants. The protoplasm-forming materials of the cereals and legumes are all sufficient for some animals, but the absence of proper bone-forming materials is deleteri-

1. Findlay, Alex.: Physical Chemistry and its Applications in Medical and Biological Science.

2. Physiological Effect on Growth and Reproduction of Rations Balanced from Restricted Rations. Research Bull. 17, Wis. Agric. Exper. Station.

3. Calcium and Phosphorus Supply of Farm Feeds and their Relation to the Animal's Requirements. Research Bull. 30, Wis. Agric. Exper. Station.

4. Famulener, F. W.: On the Transmission of Immunity from Mother to Offspring, Jour. Infect. Dis., 1912. Tunnicliff, Ruth: The Content in Antibodies of Normal Human Colostrum and Milk, Jour. Infect. Dis., 1912.

ous. For rapidly growing animals the mineral matter of milk and eggs is of vital importance.[5]

Experimental feeding with restricted diets has shown that the more the integrity of the natural food for the young is disturbed, the less satisfactory is nutrition, and if the natural combinations are broken up too much nutrition fails. An adult seems to have a capacity for synthesis which is absent or not fully developed in the young, for adults have been found by experiment to be capable of taking one form of vegetable protein and from this alone producing the proteins of its offspring and the specialized proteins of milk, while this single form of protein alone failed to produce proper nutrition in the young, although the forms of protein prepared from it by the mother resulted in satisfactory nutrition.[6]

All experiments with animals tend to show that milk, eggs, cereals, and legumes, when fed in various combinations, produce the highest possible physical development, while attempts to base feeding merely on protein, fats, carbohydrates and calorie yield, are moves in the wrong direction. The most scientific foods for infants, that is foods which will produce the best physical development, are readily prepared from milk, eggs, cereals and legumes through simple, easily-learned methods by which their chemical integrity is but slightly altered. The most scientific methods of taking these natural specialized foods apart and putting them together in attempts to improve on Nature may produce unscientific food, because an important, although small, element may be left out or put in wrong. Such methods of feeding have little to commend them.

The field for the physician as an infant feeder is broadening out and it will not require much effort for him to fit himself to occupy it. His greatest successes will come from avoiding attempts at solving feeding problems by intricate and profound chemical manipulations of the food, but rather by always being ready to utilize scientifically the biologic factor. This practically means an ability to select food of proper strength that will agree with the infant. The base of all feeding is the use of milk, eggs, cereals, and legumes and when the physician has become acquainted with the biologic principles of infancy and the properties of these food materials, he will have learned all that is necessary. He must then apply what he has learned to the individual infant. This is his problem and no one else can solve it for him in every case. The object of this paper is to show that the latest scientific studies in nutrition point favorably to great simplicity in the preparation of artificial food for infants if the biological side is properly emphasized. The principal ingredient, cow's milk, if scientifically produced and handled, may be simply diluted in right proportion to the age, keeping in mind that none of its ingredients—protein, fats or carbohydrates—must be long reduced below what is known to be their average content in human milk. The food elements entering into a complex fluid are not interchangeable at will in the scheme of nutrition. Too much manipulation, with supposed chemical or caloric requirements in mind, is apt to ignore the biologic or vital elements in the food that cannot be overlooked without danger. If a few underlying principles are conserved, the physician may employ any method that will give good results.

51 West Fifty-First Street.

5. Bull. 228, Wis. Agric. Exper. Station.
6. Osborne, Mendel and Ferry: The Rôle of Gliadin in Nutrition, Jour. Biol. Chem., 1912.

A CONSIDERATION OF SOME PRACTICAL BREAST-MILK PROBLEMS *

A. W. MYERS, M.D.
MILWAUKEE, WIS.

In the crusade against high infant mortality so much has been said about the advantages of maternal nursing that there is coming into being a better understanding of its desirability and a general acceptance of the theory of its uniform superiority over substitute foods.

This is a long step forward; but in order to hold the ground which has been gained, the theory and the facts must be shown to be in harmony. In a statistical study of the situation there is no difficulty whatever in proving the advantages of maternal nursing or in convincing the most skeptical of its possibility in a very large percentage of cases.

But there are some very real difficulties which arise not infrequently in the course of breast-feeding in which both the mother and the child require more help than can be found in a study of statistics, interesting as these may be.

A great deal has been accomplished in the way of making maternal nursing more uniformly successful by calling attention to the importance of regularity in nursing habits and of proper intervals between feedings, and by placing proper emphasis on the necessity for rest, fresh air and proper exercise for the nursing mother. In the management of the secreting breast the importance of cheerfulness and serenity of mind has not been overlooked and the value of encouragement and confidence is generally admitted, for in no other organ is the connection between glandular activity and psychic states more easily recognizable.

It would be a misunderstanding and an injustice to charge with indifference or neglect all the mothers who give up at an early period the effort to nurse their babies. Many of them have tried faithfully, fully realizing its value to the average infant, and they may have called to their aid what medical advice was available. But they have been overcome by the obstinate logic of facts. The children did not do well.

No amount of imagination or psychotherapy can convince a mother that she is pursuing the best method of feeding when her baby is constantly uncomfortable and especially when the added testimony of the scales shows that ground is being lost instead of gained.

That the number of cases of this character is fairly large will be admitted by one who inquires carefully into the reasons which have led to the abandonment of maternal nursing in the feeding cases which present themselves in any large children's hospital or dispensary. A frequent story is this: "My milk did not agree with the baby after I got out of bed, and it soon left me"; or this: "I tried for two months to nurse the baby but he cried day and night and did not gain, so I gave it up." Many of these mothers have consulted physicians in the effort to make the milk agree with the baby and have done all that they and their medical advisers knew how to do before they gave up the fight.

The problem is a real one and by no means unimportant. No doubt many factors enter into it. No one theory will explain all the difficulties which arise.

* Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

But there is one influence which is so potent in many cases that it deserves more attention than it has recently received. I mean the diet of the nursing mother.

It has been a commonplace in text-books of pediatrics to find general directions for modifying the composition of the breast-milk. Milk and all fluids are to be taken to increase the total quantity, large amounts of food with little exercise to increase the proteins, and meat, eggs and animal broths to increase the fats. All this is good in its way. But beyond this point the text-books leave us in the dark, and in the cases to which I refer there may be no departure whatever from the normal in the chemical composition of the milk, as far as can be told by ordinary methods of analysis.

The effect of various foods on the milk of the cow is well recognized. In Denmark, for example, the leading dairy country of the world, the contract of one of the principal milk-handling companies requires that the cows shall not be allowed to eat beet-tops, beet trimmings, cabbage, distiller's slops, malt, etc., and for cows producing nursery-milk the following foods as well are prohibited: molasses, cotton-seed meal, green and dry buckwheat and mustard. If rape seed is used it must be shown not to contain any considerable quantity of oil of mustard. The effect on the odor and taste of milk of silage given just before milking and of too large rations of oil cake are well known to the average dairyman. The effect of brewer's and distiller's slops in causing diarrhea in those using the milk from cows thus fed is an old story.

And yet the minor changes in the human milk caused by variations in the diet have received but scant attention in recent years. This is due in part to the fact that these changes cannot be demonstrated chemically or microscopically, but only clinically, in part to the fact that the changes in the milk do not follow instantaneously on the changes in the diet, and thus at times the connection is overlooked, and in part to the fact that in many cases the tolerance of the digestive tract of the infant is sufficient to take care of the variations in the milk of the average mother, and so no discomfort results from a reasonably varied diet.

With the child who is comfortable this paper has nothing to do; only those concern us here whose breast-feeding is presenting difficulties.

These children are not comfortable, there is restlessness, particularly during the evening or at night, or there is marked discomfort after nursing which is not relieved by the eructation of a small amount of gas. At times the abdominal distress continues through almost the entire length of the interval between nursings, and is relieved temporarily by the taking of more food, to return twenty or thirty minutes later with renewed vigor. In spite of this distress the color and appearance of the stools may be satisfactory and the child may be gaining in weight.

Or, instead of satisfactory stools, various departures from the normal may be present, varying in degree from slight changes in color alone to severe diarrheal conditions. With the more marked disturbances, loss of weight is almost invariable.

In the early weeks of lactation the effect of continued restlessness on the part of the baby is very easy to trace both in the quantity and in the quality of the mother's milk. At this period the mother has regained her strength only in part, and unless she is able to get an adequate amount of rest the milk-supply fails rapidly. If the child is continually in distress the mother usually has little opportunity to sleep and is constantly fatigued. Unless digestive comfort can be secured for the baby the supply of breast-milk may soon be entirely lost.

To indicate the character of the cases in which the diet of the nursing mother seems to be the disturbing element, a few illustrative cases will be cited.

Case 1.—Boy, 3 months of age, always breast-fed at suitable intervals, has had green stools almost constantly since birth, now has five or six small green stools daily, containing some mucus, is very restless and uncomfortable, and rarely sleeps more than half an hour at a time night or day. Examination of the mother's milk showed nothing abnormal. During the past week attempts have been made to wean the child, but the cow's milk feedings have been vomited promptly. In spite of its digestive disturbance the baby weighs 1½ pounds more than at birth.

Inquiry into the mother's diet revealed the fact that she was on an abundant general diet containing generous amounts of fruit and vegetables to overcome a slight tendency to constipation.

When the fruit and vegetables were omitted, excepting starchy vegetables like potato and rice which cause no disturbance, the number of stools became normal and within a week their green color disappeared, and the child began to sleep three and a half or four hours at a stretch. No medicine was required. Nursing was carried on successfully up to the age of 12 months.

Case 2.—Girl, 5 weeks of age, has a gonorrheal ophthalmia and vaginitis, and a superficial infection of the umbilical stump. Breast-fed entirely until a week ago but always had eight to twelve stools daily. For the past week has been given alternate feedings of breast-milk and of barley-water. Stools reduced in number to five or six daily, smooth and brownish, but baby is loosing strength. Weight 6½ pounds, half a pound less than at birth. Child cries almost constantly, mother is worn out.

The feeding intervals had been reasonable and the mother had been on a moderately restricted diet as to vegetables but had been eating oranges, apples and jellies quite freely. When the fruit was omitted the diarrhea disappeared, comfort was restored and the child began to gain in weight. A nurse was secured to enable the mother to get a sufficient amount of rest. No medicine was needed.

Case 3.—Boy, 3 months of age, always breast-fed. Bowels move only once or twice daily, but stools are always greenish and undigested in appearance. The baby is very uncomfortable most of the time and is particularly troublesome at night. In spite of the constant restlessness the child's nutrition is good and there has been a moderate but steady gain in weight.

The breast-milk has been examined and found normal, but the mother is nearly worn out by the continued loss of sleep, and the amount of milk appears to be diminishing rapidly.

Inquiry into the nursing habits showed that the breast-feeding had been intelligently directed. Numerous attempts had been made to bring digestive comfort to the child but all had failed.

On going into the subject of the mother's diet it was found that in the main she was eating very sensibly, but that she was taking oranges and cooked apples every day. When these were omitted the character of the stools became normal, the baby began to rest well, the mother was able to secure sufficient rest and her supply of milk increased promptly. Instead of finding it necessary to wean the child she was able to nurse it up to the age of 10 months.

These cases are fairly typical and it is needless to continue their recital; in all of them the aid of medical men had been sought, in all of them weaning had been considered the only solution of the difficulty, in all of them regulation of the mother's diet was all that was required.

It seems possible that some of the aromatic bodies which give flavor and odor to food substances pass over into the human milk just as they do into cow's milk. Certain it is that the foods which seem to give rise to the greatest amount of disturbance during the early weeks of lactation are those which contain the aromatic bodies in the largest amounts, such as fruits, vegetables of the more highly flavored sorts, and spices. These aromatic bodies are not destroyed by boiling, so that they are present in cooked as well as raw fruits, and in such articles of diet as jellies, preserves, marmalades, wines, etc., they are found in a considerable degree of concentration.

Whatever the nature of the irritating substances contained in the milk, there is manifestly a great variation in the sensitiveness to them displayed by the digestive tracts of different babies, or even by the digestive tract of the same baby at different ages. Many babies seem to be serene and happy under all conditions, no matter what the mother eats; other babies are restless and disturbed during the early weeks or months of life by food substances in the mother's diet which causes no such reaction at a somewhat later period.

It has seemed to me that the best method of approaching these cases is to begin by forbidding entirely to the nursing mother the use of fruits, fruit derivatives, spices, and highly flavored vegetables at the beginning of lactation or when digestive disturbances are manifested, withholding them until a norm has been established, departures from which may be recognized readily, or until digestive comfort has been restored.

An ample and varied dietary can be provided from fresh meat, fish, eggs, potato, rice, macaroni, cereals, milk, cream, butter, bread in various forms, and starchy substances, like corn-starch, tapioca, sago, etc., and from these there is very little possibility of harm.

In order to avoid the danger of disturbing lactation before it is well established and before the mother has regained her strength to a reasonable degree, it has seemed to me desirable to have an extremely bland diet of this character continued until the end of the first month. After this time additions to the diet in the shape of vegetables and fruit may be tried cautiously, not more than one new thing being tried in any one day to avoid confusion in interpreting the results, and not striving for too great a variety in order to avoid exceeding the gradually increasing tolerance of the infant's digestive tract.

Lest I be suspected of claiming originality for these ideas let me add that among the earliest writings on pediatrics which have come down to us from Greek medicine are instructions as to the diet of the nursing mother. Paul of Aegina quotes from Oribasius, who lived from 326 to 403 A. D., the following directions:

> She ought to avoid everything of a very desiccative nature, and likewise such as are saltish, sour, acid, bitter, very heating, or of offensive smell; also, such as are strongly fragrant, condiments, and such like acrid substances.

To-day the pendulum has swung in the opposite direction and it has become the fashion to say that restriction is unnecessary and that the mother's diet has very little effect on the digestibility of her milk, except in a general way.

It seems to me that we have gone too far in removing our restrictions and that in this matter we can well afford to listen to Oribasius, Aristotle, and Hippocrates.

THE FEEDING OF SKIMMED BREAST-MILK*

FRANK C. NEFF, M.D.
KANSAS CITY, MO.

The problem of digestive and nutritional disturbances in the breast-fed is ever with us, and should be met scientifically before resorting to complete artificial feeding. High fat content of the milk, intolerance of the infant for fat, nervous disturbances in the mother, inherited feeble digestive powers of the infant and other causes must be considered. Examination of the stools will often furnish evidence of the nature of the intolerance, and when the fat is at fault a reduction in the amount ingested may permit the continuance of breast-feeding and be only temporarily necessary.

It seems conservative to say that a fat-reduced breast-milk will be as easily digested, when a reduction is necessary, as is fat-reduced cow's milk or any artificial food. Efforts to increase the digestibility of breast-milk through attention to the mother's health are often unsuccessful. Regulation of the length of nursing, giving a known quantity of milk by weighing the infant before and after nursing, lengthening the intervals, diluting the drawn milk—all may be tried. When these are done, we still have many infants that are unsuccessfully fed. Simple dilution of the milk reduces all the percentages, but in skim milk there remains the original amount of sugar, salts and protein. None of these causes disturbances in the breast-fed with the possible exception of great variations in the sugar.[1]

INDICATIONS FOR THE USE OF A FAT-REDUCED BREAST-MILK

Cowie[2] has demonstrated that high fat food tends to slow stomach evacuation, because the duodenal closing reflex is stimulated when fat is present in the duodenum.

Morse[3] believes that in the treatment of pyloric spasm, the best food is good breast-milk, and if this is vomited, it is well to remove a part of the fat so as to keep its percentage low and thereby hasten the emptying of the stomach.

The value of stomach washing in pylorospasm cannot be denied, but an adjuvant is found in the reduction of the fat in the food. Persistent vomiting in which there is no constant or intermittent obstruction at the pylorus gives also a like indication. Rott[4] believes that certain cases of vomiting which consist of a gastric neurosis are caused by a fat-rich breast-milk, and are cured by administering the opposite.

Towle and Talbot[5] came to the conclusion that the indigestion of fats and carbohydrates as found in the stools occur with some regularity in association with infantile eczema. In the exudative diatheses an intolerance exists for fat.

Infantile eczema occurs more often probably in the breast-fed. It is often found in the overfed child. A reduction in the amount of fat ingested is indicated.

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* Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Lust (Monatschr. f. Kinderh., 1912, xi, 226) shows that high percentage of sugar can in some instances be the cause of acid formation in the intestine and therefrom give occasion to diarrhea. When the sugar is low, an inhibiting influence on intestinal peristalsis can be occasioned.
2. Cowie: Am. Jour. Dis. Child., March, 1913, p. 233.
3. Morse: Am. Jour. Dis. Child., May, 1911, p. 366.
4. Rott: Vortr. Ver. f. inn. Med. u. Kinderheilk., Berlin, May 29, 1911.
5. Towle and Talbot: Am. Jour. Dis. Child., October, 1912, p. 219.

Too great a fat content in breast-milk can cause digestive disturbances, especially in the premature.[6]

Finklestein and Meyer[7] have shown that the nutrition of breast infants can suffer from the fat of human milk, if a severe enough injury has been done to the intestine.

Nothmann[8] advises the use of less rich milk in the premature infants with weak digestions.

Ritter[9] reports a series of cases in which intestinal injury occurred through the feeding of fat-rich breast-milk, and repair was brought about through the use of fat-poor milk.

Langstein,[10] in the study of eighty-eight infants suffering from disturbances of nutrition, found that the restoration of the child was often completed in a shorter time by the use of breast-milk from which the fat was removed.

During the past year I have been trying to determine the value of fat-reduced breast-milk as a food in congenital weaklings and in infants who show intolerant symptoms after nursing. If it were possible to change the composition of the milk so that digestion would be rendered comfortable, the child might soon increase its tolerance for larger quantities of whole milk and thus continue to be nursed at the breast. In not all cases was the experiment successful. In some the child was lost sight of or it was impossible to secure enough breast-milk. Some distinctly successful cases warrant their report in brief.

Case 1.—Baby F., born at 8 months, birth weight 5 pounds. At the age of 3 weeks child began to vomit and to have numerous loose undigested stools. The length of breast-nursing was cut to a few minutes and a definite amount of breast-milk given. Whenever nursing over five minutes, the stools increased to six to eight daily. Had much pain from distention. At the age of 10 weeks the weight was 6 pounds. A wet-nurse was secured and her milk drawn and skimmed. Beginning with 1½ ounces of skimmed milk supplemental to the three-minute nursing of the mother, the stools reduced in number from three to five daily, sleep became normal, weight gained. Child was uncomfortable when on an entire feeding of whole milk. At the end of fourteenth week, weight was 7 pounds and 9 ounces. At the end of fourth month weighed 9 pounds, and has since gained normally.

Case 2.—Baby N., full-term child, had been taken from the breast because of evidences of indigestion and failure to gain. Artificial food, a condensed milk, had been resorted to with no improvement in the condition. A wet-nurse was secured at my suggestion, with a continuance of the dyspeptic symptoms. The amount of breast-milk was reduced definitely to the minimum necessary for a sustaining diet. The colic and crying did not abate. As much drawn milk as could be secured was skimmed and given as supplemental or exclusive feedings with increased comfort to the child and a gain in weight permitting a complete return to whole milk within a few weeks.

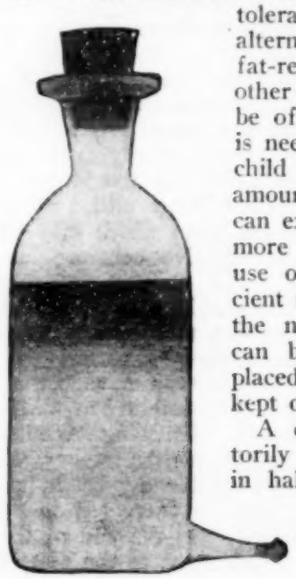
Case 3.—Baby E., aged 3 months. Had been exclusively on mother's milk since birth with exception of the recent supplemental use of a proprietary food. Vomiting of most of the food, much colic, but stools were said to have been apparently normal, no gain over birth-weight, which was 4 kg. Child markedly atrophic. The possibility of pyloric obstruction was disproved by the administering of a barium chlorid meal, under fluoroscopic and roentgenographic observation, there being no delay in the emptying-time of the stomach. Stomach-washing brought no considerable residue. A wet-nurse's milk was substituted for a part of the mother's nursings with no improvement, reduced in amount to 1-ounce nursings at three-hour intervals. The wet-nurse's milk, skimmed, was then administered at the beginning in 1-ounce doses, supplemental to the known amount of mother's milk. No gain in weight during the time the child was under my observation, two weeks. Vomiting promptly ceased, the child's comfort and sleep practically normal.

Case 4.—Baby H., aged 2 months, breast-fed, mother in good health and had successfully nursed two other children. Constant vomiting with pylorospasm and daily convulsions. Lavage and regulation of the amount ingested brought relief from vomiting but no gain in weight. Supplemental feedings of skimmed breast-milk from the mother and wet-nurse were given, at first in small amounts and later in as large as the infant could tolerate. Uneventful recovery.

6. Planchaud and Rendu: Arch. de méd. d. enf., 1911, xiv, 582.
7. Finklestein and Meyer: Jahrb. f. Kinderh., 1910, lxxi, 525.
8. Nothmann, H.: Ztschr. f. Kinderh., 1913, vi, 578.
9. Ritter: Vortr. Deutsch. Gesellsch. f. Kinderh., Wien, 1913, ix, 20.
10. Langstein: Vortr. der Berlin. med. Gesellsch, 1911, xi.

METHODS OF OBTAINING BREAST-MILK

An effort is made to withdraw a part or all of the twenty-four-hour milk from the mother. Allowing the infant to nurse a few minutes each time and then supplementing it with the necessary ounces of breast-milk, previously drawn and skimmed, will keep the breasts active and in some instances will be found to be tolerated well by the child. Or alternate nursings and feeding of fat-reduced milk may be used. In other cases all the feedings will be of skimmed milk, as long as is needed for the welfare of the child and while the necessary amount is available. Many women can express the milk by massage more satisfactorily than by the use of the pump. When sufficient milk is not obtainable from the mother, a wet-nurse's milk can be obtained. The milk is placed in a covered reseptacle and kept on ice.



Eight-ounce tubulated bottle used for separating the breast-milk from the cream.

A detail that works satisfactorily is the storage of the milk in half-pint or larger tubulated bottles which have been made in an 8-ounce size for me by Whitall, Tatum and John M. Maris. A rubber stopper closes the mouth of the bottle, and another one the small opening at the bottom. This bottle is a duplicate of the nasal douche bottle listed in the catalogs. All of the milk up to the cream line can be withdrawn without mixing the cream. With a little experience rich or poor milk can be told at a glance by the depth of the cream-line in this bottle.

I have examined numerous specimens of breast-milk to determine how much fat is removed by this method. The average fat-content of skimmed breast-milk was determined by the Lewi modification of the Babcock test:

Average content of specimens before skimming, 3.1 per cent.

Fat content at the end of four hours, 1.8 per cent.

Fat content at the end of eight hours, 1.5 per cent.

Fat content at the end of twenty-four hours, 0.9 per cent.

In the specimens from which the foregoing averages were taken:

From 1 to 1.7 per cent. fat was removed at four hours.

From 1.5 to 2.7 per cent. fat was removed at eight hours.

From 2.0 to 3.0 per cent. fat was removed at twenty-four hours.

Breast-milk stays sweet on ice much longer than cow's milk, and even during the summer months has been perfectly good as long as three days.

CONCLUSIONS

1. There are certain cases in which the temporary feeding of skimmed breast-milk is advisable until the digestive difficulties of the infant are over and a return to whole breast-milk is possible.

2. This method of feeding is worthy of trial in the great class of infants with intestinal indigestion as manifested by abdominal distention, colic, fretfulness, loose, green dyspeptic stools, failure to gain in weight through several weeks; in babies that have gastric and pyloric symptoms; in the eczema of infancy, and in the congenitally weak and premature infants.

3. Skimmed breast-milk is a safe and digestible food, and is applicable whenever a fat-free milk is indicated.

4. Human milk permits of simple cream separation and can usually be obtained for this purpose from the mother or wet-nurse.

900 Rialto Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MYERS AND NEFF

DR. JOHN ZAHORSKY, St. Louis: If there is one thing we need it is a simple method of treating or preventing the severe dyspepsia that some infants have in the first few days or weeks of life. Little that is definite is found in the literature and I believe we should more and more study these cases. I was surprised to hear Dr. Myers say that the effects of fruits were so bad. Oranges and apples and other fruits have been permitted to nursing mothers, yet, from his observations, these things are not tolerated. Modern writers do not exclude fruit from the mother's diet. Some of the older writers are substantiated by our observations of to-day. We know that these dyspepsias often disappear spontaneously. I recall one baby who had severe attacks of acid dyspepsia, with severe pain, loss in weight and fever. The baby was put on rice-water each time, gradually going back to the breast. The symptoms slowly disappeared. What we want to know is what caused the acid dyspepsia. After all, we know very little about breast-fed babies. As soon as we do know we will be able to keep mothers nursing their babies. The mothers are not unwilling, but when the poor mother who has been up night after night with a screaming baby finds it is not thriving, she will not keep the baby on the breast. No matter how much you may encourage her, she will not nurse it under these circumstances.

DR. CHARLES DOUGLAS, Detroit: For many years I have been opposed to fruits in the diet of nursing mothers, and general practitioners have opposed and laughed at me, because they said fruits did no harm. These papers I think should be of great force to general practitioners. Unfortunately, the profession has learned to give everything to the nursing mother. It is a well-known fact that those who deal in animals, breeding stock, etc., know more about the nutrition of the young animals that they raise to sell than the human family knows about their own offspring. It is a shame to own it but it is true. I have commented on it for many years. Dr. Myers classifies the fruit foods which should be objected to. He gives as a reason "high flavor." I think he should have gone further. It is not the high flavor alone; it is the sugar. Fruits are composed almost entirely of sugars and acids. Must we exclude sugar or flavors from the milk? I believe it is the sugar. I have seen instances in which mothers have indulged in sweet things to excess and have ruined their children's digestion. The children would immediately improve when the mothers abstained from sweets. I would prohibit sugar in the various drinks which are given to children. To have a baby's digestive organs ruined by an ignorant woman is an everyday occurrence. Some of our trained nurses also are guilty, I am sorry to say. They give the child something sweet because it likes it, and they lay up trouble right from the first twenty-four hours. I think physicians should take as much interest in the child as in the mother. At each visit they inquire particularly into the health of the mother but give little attention to the child. If the physician would always lay down a rule in the beginning to prevent the nurse feeding sweets to the child, we would have less of those troubles.

DR. HARRY LOWENBURG, Philadelphia: Last year I read a paper dealing with this subject, "The Etiology of Artificial Feeding," in which I discussed some of the causes leading to discontinuance of breast-feeding, and I believe this study will lead us to handle these cases more intelligently. Physicians are very quick to discontinue breast-feeding when these symptoms appear, because they are at a loss how to meet them. In the treatment of green stools, and of vomiting, which is not organic but dependent on some food mixture which the child receives, I believe the study of the mother's diet is important. Dr. Neff's suggestion that some of these cases will do well on skimmed milk is also important. If this knowledge could be spread broadcast to the general practitioner, I think more children could be kept on the breast and infant mortality would be lessened.

DR. JOHN LOVETT MORSE, Boston: We all believe that human milk is the best food for the baby. We have been inclined for that reason to conclude that human milk was the best food for the baby under all conditions. That is not always true. We have to remember that human milk contains fat, milk sugar and protein. When we have poor fat tolerance, or when we have bad milk-sugar tolerance, the fat and sugar in human milk will disagree in almost the same way as the fat and sugar in cow's milk would disagree. I say almost, because they do not disagree to the same extent. The baby will often be able to assimilate human milk when it could not assimilate cow's milk of the same composition. It is in the cases in which skimmed milk is useful, that straight breast-milk does not agree. Skimmed breast-milk may be used in these cases and will often be tolerated when skimmed cow's-milk is not. I think there is no question that fruit and highly flavored foods in the mother's diet cause a disturbance in the baby's digestion, but I believe that it is the exception and not the rule, and that the majority of healthy nursing mothers can eat almost everything. If the baby is disturbed, we must find out what article of food is the cause. When the baby is crying, having green stools, etc., the trouble in the breast-milk is usually not so much due to the diet of the mother as to anxiety and fatigue, which increase the amount of protein in the milk. I believe a great deal can be done, not by changing the mother's diet, but by regulating her habits and life and by reassuring her if she is nervous. I feel confident that there are practically no data to prove that any ordinary increase in the amount of sugar in a woman's diet will have any influence on the amount of sugar in her milk. It must be extreme in amount to have any effect.

DR. A. W. MYERS, Milwaukee: Among the substances which influence the taste and odor of foods are certain phenol derivatives which are largely responsible for the flavoring in the more highly flavored foods. What rôle they play in the body is not exactly clear. In the ordinary process of metabolism, these phenol bodies are apt to be combined with the glucose of the blood and eliminated in the urine in the form of phenylglucuronic acid. During lactation a new outlet for the blood-sugar is provided and it is possible that some of the phenol bodies may enter the milk in combination with the sugar.

It is remarkable how large a gap there is in our knowledge of the composition of human milk. Meigs and Marsh have recently shown that there are unknown substances in human milk amounting to about 1 per cent., approximately equal to the percentage of lactalbumin.

As Dr. Morse has truly said, undoubtedly these cases to which I have attempted to call your attention are the exception rather than the rule. I stated that when a baby was doing well on the breast, the ideas expressed in the paper did not apply; they apply only to the baby who is not doing well. I think there are more babies who have than who have not a digestive tolerance sufficient to take care of the normal variation in the mother's diet. Fatigue and worry have a distinct effect. I attempted to call attention to this effect of anxiety and fatigue, which increases the digestive disorders at this period. With regard to the effect of sugar in the mother's diet, it seems to me the effect is indirect. Sugar ingested by the mother may disturb her digestion and in that way indirectly disturb the infant's digestion.

SOME PRESENT-DAY PROBLEMS IN THE SURGERY OF GASTRIC AND DUODENAL ULCER*

HAROLD COLLINSON, M.S., F.R.C.S.
LEEDS, ENGLAND

When your officers paid me the great compliment of asking me to submit a paper to the Section on Surgery, I felt that if I were to accept I must present a contribution which would be of practical value and would stimulate some discussion.

The life of a surgeon attached to a large hospital presents few opportunities for purely experimental research, and his observations are to a large extent confined to the clinical side of surgery. It has been my great good fortune to be closely associated with Sir Berkeley Moynihan for a number of years in both his private and hospital practice, and my interest in the surgery of the stomach and duodenum has naturally been greatly stimulated and by his kindness I have been offered numerous opportunities.

Sir Berkeley Moynihan in my country and Drs. William and Charles Mayo in your own have said almost all that is to be said with respect to the treatment of chronic duodenal and pyloric ulceration, but there are still certain complications and varieties of ulcer concerning the treatment of which surgical opinion is not yet crystallized, and it is with these that I wish to deal. I cannot pretend that what I have to say is in any sense final or that from the material at my command I can draw absolutely definite conclusions, but I will endeavor to indicate in what direction I imagine the road lies to a satisfactory solution of the problems.

I wish first to consider the condition of acute perforation of a duodenal or gastric ulcer. During the last year or two much has been written on this subject and I can present nothing new to you with regard to the diagnosis. I wish to lay stress however, on the following points.

Perforation of a gastric or duodenal ulcer is, with the exception of appendicitis, the most frequent acute abdominal lesion.

It is a condition in which the mortality is directly proportionate to the number of hours which have elapsed between the perforation and operative relief. This is well illustrated by my own cases. Up to the present date I have been called on to operate in 53 cases of acute perforation of a gastric or duodenal ulcer; of these 40 were duodenal and 13 gastric. Of the 40 cases of duodenal perforation, 27 patients recovered and 13 died; of the 13 gastric ulcers 6 patients recovered and 7 died. Out of the 53 cases 24 patients were operated on within twelve hours of perforation, with 21 recoveries and 3 deaths, a mortality-rate of 12.5 per cent.; of these three patients one, who was an alcoholic, died of acute pneumonia and another died on the eighth day quite suddenly and from no ascertainable cause, the peritoneal cavity being quite clear. Of the remaining 29 patients operated on at various periods after the first twelve hours had elapsed, 12 recovered and 17 died, a mortality-rate of over 58 per cent.; a further investigation shows that in the cases of over twenty-four hours' duration, the mortality is close on 80 per cent., so that in reality the seriousness of the prognosis increases by leaps and bounds as every hour elapses. This fact has been frequently insisted on and is well borne out by the collective report of 200 cases of perforated duodenal ulcer, published by a number of Edinburgh surgeons in the *Edinburgh Medical Journal* of last year.

The imperative necessity for early operative interference makes it essential that the symptoms of perforation should be realized by the practitioner who first sees the case, for on his prompt diagnosis the fate of the patient depends.

That diagnosis is becoming more accurate is evidenced by my own cases, for of the last 13 patients, 12 were operated on within twelve hours and all but one of these recovered.

I would emphasize the importance of the following points in diagnosis:

1. The sudden onset of violent pain in the upper zone of the abdomen.
2. The short duration of symptoms of shock or collapse.
3. The board-like rigidity of the abdominal muscles, particularly above the level of the umbilicus; this rigidity is, in my experience, more marked than in any other acute abdominal condition and in itself is almost sufficient to justify the diagnosis.

Diminution of liver dulness and signs of free fluid are later in their appearance and should not be considered as in any sense necessary for diagnosis; it should be our endeavor to make a decision before they are manifest.

It is not my intention to consider differential diagnosis, for this has frequently been discussed, so I will at once proceed to the consideration of some points in the operative technic.

As soon as operation is decided on, it is my practice to give a hypodermic injection of ¼ grain of morphin. By this means the amount of anesthetic necessary to abolish the rigidity of the abdominal muscles is materially diminished and postoperative restlessness overcome.

I am a firm believer in the Fowler position, notwithstanding the fact that recent investigations appear to show that the physiologic reasons urged for its adoption were fallacious; clinical experience, I am convinced, justifies us in retaining it.

We have all patients in whom a perforation is suspected propped up in bed at once and conveyed to the operating-theater in this position. The operating-table is tilted, so that the patient's thorax is considerably higher than his pelvis, and afterward he is returned to bed in the same manner.

The abdomen is opened through the right rectus muscle and the existence of a perforation is deter-

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

mined by the presence of free gas or the characteristic effusion. Gauze packs are passed into the right kidney pouch and downward to the umbilical region, and then the position of the perforation is determined.

In perforated duodenal ulcer I am usually content to close the opening by three sutures of Pagenstecker thread of the Lembert type by which the perforation is infolded. These I endeavor to place at right angles to the long axis of the intestine in order to prevent stenosis; in large perforations I have frequently taken two or more sutures through all the coats of the bowel to close the gap and then infolded these by a second layer. Exceptionally I have excised the perforation by an elliptical incision in the long axis of the bowel and closed it by two layers of suture in the opposite direction. The treatment to be adopted must necessarily vary according to the condition found. In many small perforations with little surrounding infiltration, infolding sutures are simply applied and are quite effective; but in the larger perforations with much induration, more elaborate procedures may be necessary.

The foregoing remarks apply equally to ulcer of the body of the stomach, although in such cases more extensive infolding is possible than in the case of pyloric and duodenal ulcers.

After the perforation is closed I spend a moment or two in cleansing the subphrenic and subhepatic spaces; the semi-upright position materially assists in this, and the exudate is carefully swabbed out with gauze mops saturated with warm saline solution. No further attempt is made to cleanse the peritoneal cavity, but a stab incision is made above the pubes, a large split rubber tube inserted through it to the bottom of the pelvis and the upper wound closed without drainage. The patient is returned to bed in the Fowler position and continuous proctoclysis begun.

This is the operative technic which experience has shown me to be the most satisfactory, and I believe that it differs hardly at all from that of most other surgeons who have had to deal with many of these cases. There is one question, however, on which there appears to be a considerable difference of opinion, and that is whether or not a gastro-enterostomy should be performed at the time the perforation is closed. Sir Berkeley Moynihan, in 1901, was, I believe, the first to advocate the occasional performance of a primary gastro-enterostomy, but his views have been somewhat misrepresented on more than one occasion. Since that time widely divergent opinions have been expressed by many authorities, and the arguments for and against a routine gastro-enterostomy have been admirably set forth by Elsworth Eliot.[1] With his conclusions I entirely agree.

The question may be considered from two points of view.

1. Is a gastro-enterostomy necessary or advisable for the immediate recovery of the patient?

2. Is it advisable in order to obviate future trouble provided he recovers from the perforation?

The first proposition that a gastro-enterostomy should be performed in all cases as a routine procedure because it materially assists the immediate recovery of the patient is, I am convinced, a dangerous view to hold. If this course were universally adopted I am quite sure that it would result in a large increase in mortality. The arguments advanced for routine gastro-enterostomy are that more secure closure of the perforation can be attained, that there is less risk of leakage, hemorrhage and subsequent perforation, and that feeding and purgation of the patient are simplified. While I am prepared to admit that in certain instances, such as perforation of an ulcer at the isthmus of an hour-glass stomach or of a very indurated ulcer of the pylorus where closure produces almost complete stenosis, a gastro-enterostomy is imperative whatever the condition of the patient may be, I am strongly of opinion that in practically every case of ulcer of the body of the stomach and the vast majority of pyloric and duodenal ulcers, a gastro-enterostomy is unnecessary for the immediate recovery of the patient and that its performance as a routine is unsound.

In the series of cases collected by Elsworth Eliot and by the Edinburgh surgeons I have already mentioned, there was no evidence to show that in a single case its omission was responsible for a fatal result. My personal experience is identical. Among the twenty fatal cases in my series there is only one in which there was evidence of leakage after suture, and this was a case in which a very large indurated ulcer on the lesser curvature showed a perforation the size of a shilling. The only method by which secure closure could have been attained would have been by excision of the ulcerated area, and the grave condition, of the patient made this impossible. The fact which has impressed me more and more as my experience has accumulated has been that an infolding of the pylorus or duodenum which at the time appears to produce a considerable grade of stenosis subsequently gives rise to no symptoms of obstruction. I have on only two occasions had to operate within a short time, that is to say a couple of months, for obstruction at the pylorus. So far as I can judge, the immediate convalescence of the patients with and without a gastro-enterostomy differs little or not at all.

Let us now consider the second proposition, that an immediate gastro-enterostomy is advisable in order to prevent further trouble and a persistence or recurrence of ulceration. My own experience may be summarized as follows:

Out of 33 cases of perforated ulcer with recovery, 28 were ulcers at the pylorus or in the duodenum; of these 13 were treated by suture alone or excision and suture and 15 by suture and primary gastro-enterostomy. Three of the cases of suture and 1 case of gastro-enterostomy are too recent to be of value. Of the remaining 10 treated by suture I have been able to trace 9; of these, 4 patients are perfectly well with no symptoms of recurrence and of the other 5, 1 has symptoms of persistent ulceration and 4 have had a secondary gastro-enterostomy. The conditions found in these 4 patients are of interest; in 1 case operation was performed within a month for stenosis, but in the other 3 there was at the time of the secondary operation no evidence of either active ulceration or actual stenosis, the symptoms apparently being due to adhesions about the pylorus and duodenum. All these four patients are now in good health.

Of the 14 cases treated by a primary gastro-enterostomy I have traced 11. Of these 9 are quite well, 1 has since died of carcinoma of the esophagus and another has pain and vomiting after food. Three days before I left home I operated on this man and excised a large gastrojejunal ulcer which had occurred at the anastomosis. My colleagues on the staff of the Leeds Infirmary have kindly allowed me to inquire

1. Eliot, Elsworth: Ann. Surg., 1912.

similarly into the late results of their cases, but I have been unable to trace a considerable percentage of the patients; I will give the results, however, for what they are worth. Of 26 cases of pyloric and duodenal ulcer treated by suture or excision and suture, I have traced 17; of these 13 patients appear to be quite well and 4 have had a recurrence of symptoms. In 2 of these a secondary gastro-enterostomy has been performed. Among the 9 cases which I am unable to trace, it is probable that there are some with a recurrence of trouble.

Of 22 cases in which a primary gastro-enterostomy was performed I have been able to trace 16, of these 10 patients are quite well and 6 still have some digestive trouble. Combining the results of my own and my colleagues' cases therefore we have 26 cases treated by excision or suture in which the subsequent history is known; of these 17, or 65 per cent., are quite well, and 9, or 35 per cent., have had a recurrence of symptoms; in 6 of these a secondary gastro-enterostomy has been performed with a satisfactory result. Of the 27 cases of primary gastro-enterostomy, 19 patients, or 70 per cent., are well, 1 is dead from another cause and 7 still have digestive trouble.

Among the cases of perforated duodenal ulcer in which a primary gastro-enterostomy was not performed are 9 cases in which one of my colleagues, Mr. Dobson, excised the ulcer very freely and then sutured the wound transversely to the axis of the intestine, performing a plastic operation much on the same lines as that described by Dr. W. J. Mayo. Of these patients 7 have been traced, and of these only 2 have any symptoms of indigestion. It may be that an operation of this type or a Finney pyloroplasty is more likely to confer immunity from recurrence than a mere infolding of the perforation.

With regard to perforated ulcers of the lesser curvature and body of the stomach, I find that my colleagues and myself have had during the same period 49 cases with 20 recoveries. Of the latter I have been able to trace 13. All were treated by suture or excision of the perforation and in no case was a gastro-enterostomy performed. Of the 13 patients 10 are quite well and in 3 there has been a recurrence of symptoms; one of these was a patient of my own in whose case I subsequently did a gastroplasty for hour-glass stomach. The patient still has some trouble but is much better.

The number of cases, reports of which I have been able to collect, is perhaps too small to draw any definite conclusions, and the time which has elapsed since operation in some of them is too short to eliminate the possibility of a recurrence of symptoms; but the results of my investigations I believe justify one in drawing the following conclusions:

In cases of ulcer of the lesser curvature or body of the stomach, closure of the perforation and infolding is followed by cure of the condition in a large proportion, possibly 75 per cent. of the cases, and a primary gastro-enterostomy is unnecessary.

In cases of pyloric or duodenal ulcer a considerable number of the patients, probably about 40 per cent., will suffer from a recurrence of symptoms if the perforation is merely closed, but these symptoms seem in a proportion of the cases to be due to adhesions and not to stenosis or recurrent ulceration. This estimate of the frequency of recurrence is less than that of my friend Mr. Corner.

Judging from my own cases with which I have kept closely in touch, there is no doubt whatever that the patients in whom a primary gastro-enterostomy has been performed present more satisfactory late results than those in whom the perforation has just been closed, and it will be noticed that among the recovered cases the former are more numerous than the latter. This is explained by the fact that I have performed a gastro-enterostomy only in those cases in which the perforation was recent and the patient in good condition.

I would briefly summarize as follows:

1. There is no evidence that the performance of a primary gastro-enterostomy is necessary for the recovery of the patient.

2. In cases in which the grade of peritonitis is severe as evidenced by semipurulent effusion, injection of the visceral peritoneum and symptoms of toxemia, a primary gastro-enterostomy should not be performed except in the very rare cases in which closure of the perforation causes an almost complete stenosis.

3. The surgeon who is familiar with the operation is justified, and I think, is well advised to perform a gastro-enterostomy in cases of pyloric or duodenal ulcer in which the perforation is recent and the patient in good condition. In ulcers of the body of the stomach a gastro-enterostomy is best omitted.

4. The surgeon who is not experienced in gastric surgery had better be content with closing the perforation.

5. Both to those who are experienced and those who are not I would make the following suggestion: "When in doubt, don't."

I wish now to draw your attention to a type of ulcer the treatment of which presents one of the most perplexing problems in gastric surgery. I refer to the chronic ulcer of the lesser curvature of the stomach. There is probably no operation which produces more gratifying results than gastro-enterostomy for chronic ulcer of the duodenum and pylorus, but there appears to be no doubt that similar results are not forthcoming in many cases of chronic ulcer of the body of the stomach for which a similar operation has been performed.

In endeavoring to find an explanation for this, one is confronted with the question, "In what manner does a gastro-enterostomy produce healing of an active ulcer at the pylorus or in the duodenum?" Some authorities maintain that the beneficial result is the consequence solely of more rapid evacuation of the stomach and diversion of the contents through the new opening. Others, Paterson particularly, maintain that the effect of the operation is purely physiologic and is dependent on an alteration in the gastric secretion mainly in the direction of the reduction of the total acidity. Possibly the truth lies somewhere between the two theories, but I believe that modification of the gastric secretion plays a not unimportant part. Paterson, in support of his view, states that in his own experience the results of gastro-enterostomy for ulcers of the body of the stomach have been almost universally successful and quite as good as in ulcers situated at the pylorus or in the duodenum. In this I believe he is at variance with other surgeons who have had extensive experience. Mayo and Moynihan long ago recognized that many cases were unrelieved by the short-circuiting operation, and were pioneers in the treatment of ulcers of the lesser curvature by a wedge excision and those of the posterior surface by the transgastric route.

In considering the operation of excision the first question one asks oneself is, Why should not ulceration recur either at the line of the incision or in another part of the stomach, seeing that it is probable that the conditions which gave rise to the ulceration in the first instance still persist? That such recurrent ulceration does not infrequently take place I shall endeavor to show.

Mayo, in a review of 1,000 cases of ulcer of the stomach and duodenum, gives one to understand that the results of excision alone have been disappointing and the results which I will put before you leave much to be desired.

By the kindness of my colleagues I have been able to investigate the end-results in a considerable number of cases of ulcer of the body of the stomach treated in various ways; the larger number of the cases occurred in the practice of Sir Berkeley Moynihan, and to him and my other colleagues of the Leeds Infirmary I wish to express my indebtedness. I have arranged the cases in the following groups:

1. Cases treated by excision alone.
2. By gastro-enterostomy.
3. By excision and gastro-enterostomy.
4. By other methods such as partial gastrectomy.

Cases of chronic ulcer on the lesser curvature or posterior surface of the stomach treated by wedge excision or transgastric excision.

Of these I have been able to collect 39, and 33 of them have been traced. Of the 33 patients 12, or 36 per cent., are quite well at periods varying from two to five years. Four patients are improved but not free from trouble, there was 1 operative death, and 1 patient died six months after operation with no improvement. In the remaining 15 cases, or 45 per cent., there has been a recurrence of symptoms. It is worth while to consider some of these cases in detail.

In 10 of the cases symptoms recurred within twelve months of the excision and necessitated further operation. Two of these patients were operated on for acute perforation of a recurrent ulcer at the site of the previous excision, and both patients died. One of them I operated on myself. The history is briefly as follows:

J. D. S., man, aged 40, admitted November, 1911, under one of my colleagues, with symptoms of gastric ulceration. At the operation a large chronic ulcer was found on the posterior surface of the stomach involving the lesser curvature about two-thirds of the distance from pylorus to cardia. This was excised by the transgastric method and the gap in the stomach closed. He was well for about six months and then had a recurrence of indigestion with occasional vomiting. The symptoms became worse and early in 1913 he had several attacks of hematemesis. In March he was admitted obviously very ill and much blanched. Hematemesis recurred and four days after admission he was suddenly seized with acute abdominal pain and all the symptoms of perforation. I saw him within an hour and operated immediately. I found a large indurated ulcer on the lesser curvature and posterior surface of the stomach, adherent to the upper border of the pancreas; there was a perforation the size of a pea at its upper margin and extensive peritoneal extravasation. The perforation was closed, but the patient died twenty-four hours later. Post mortem, it was found that the old anterior incision in the stomach was soundly healed, but that at the site of the posterior wound there was a large indurated recurrent ulcer which had perforated. Between this ulcer and the pylorus on the posterior stomach wall there was a second acute ulcer the size of a shilling.

In the second case of acute perforation operation was performed by my colleague, Mr. Dobson, and with several other cases was reported by him in a paper read before the British Medical Association in 1912. The acute perforation occurred in an ulcer at the site of an excision seven months earlier. This patient also died.

In 5 other cases a secondary operation demonstrated recurrence of active ulceration at the site of the old excision; in 3 of these a posterior gastro-enterostomy has been performed with considerable relief; in the fourth case recurrence of ulceration had produced a marked hour-glass contraction of the stomach, and gastrogastrostomy combined with posterior gastro-enterostomy has apparently brought about a cure. In the fifth case an operative death followed anterior gastro-enterostomy.

The eighth case in which we have definite evidence of recurrent ulceration having taken place is worthy of description in detail. The patient was under the care of Mr. Dobson and the case was recorded by him in the communication I have already referred to. Briefly the case is as follows:

E. L., woman, aged 39, admitted July, 1910, with a very long history of gastric trouble. At operation an ulcer was found on the posterior surface of the lesser curvature high up near the cardia. Ulcer excised. Appendicectomy. Readmitted June, 1911 (twelve months later), for recurrence of symptoms. There was tenderness and rigidity in the epigastric region. When the abdomen was opened, an ulcer was found on the anterior surface of the stomach adherent to the parietal peritoneum. The ulcer was situated below the scar of the previous excision and was quite distinct from it. It was found to have chronically perforated into the abdominal wall. The affected middle zone of the stomach was resected, the pyloric pouch closed and a posterior gastro-enterostomy performed into the cardiac portion. The patient has remained perfectly well up to the present time.

In three other cases a secondary operation has been performed but no evidence of active ulceration discovered, extensive adhesions about the pylorus and site of the excision evidently being responsible for the persistence of symptoms. A posterior gastro-enterostomy has been performed and the patients are much relieved. In the remaining 4 cases the patients have symptoms suggestive of recurrent ulceration, but no secondary operation has been performed.

To recapitulate, therefore, out of 39 cases of excision we have 15 cases in which severe recurrence of symptoms has occurred. Eleven have been submitted to a secondary operation; of these 7 showed active ulceration at the site of excision, 1 showed chronic perforation of an ulcer distal to the previous ulcer and 3 were the subjects of extensive adhesions with no evidence of active ulceration. Four cases have a return of symptoms but no operation has yet been undertaken.

One must confess that these results are not encouraging. It may be that the recurrence of ulceration is consequent on a too niggardly excision of the ulcer, but an ulcer occurring at a distance from the site of the excision, as was found in two of the cases, must be due to another cause, the persistence of the morbid condition which was responsible for ulceration in the first instance.

The presence of adhesions around the area of excision, by interfering with gastric mobility is evidently liable to produce symptoms even if there be no active ulceration.

Let us now see what are the results in cases which have been treated by gastro-enterostomy alone.

I have been able to trace 19 which were treated by posterior gastro-enterostomy; of these 1 is too recent to make the result certain, but of the remaining 18 patients, 11, or 61 per cent., are quite well at periods from six to two years after operation, 5 show marked improvement, 1 is not improved and the remaining one had a persistence of symptoms which have been relieved by the subsequent excision of a large and adherent posterior ulcer which was found to be unhealed nine months after the gastro-enterostomy.

In addition to these cases there are 3 in which an anterior gastro-enterostomy had to be performed, and 7 in which an anterior gastro-enterostomy in Y was done. Of these 10 patients 4 are quite well, 1 is improved, 1 is dead, 2 are not improved and 2 have developed jejunal ulcer. It will be seen, therefore, that the results of the anterior operation are not nearly so favorable as those of the posterior, and this may be accounted for by the fact that an anterior anastomosis has usually been necessary for cases in which a large ulcer was infiltrating the pancreas.

Of cases treated by excision of the ulcer and gastro-enterostomy I have traced 9, 4 of which are my own cases. Of the 9 patients, 6 have remained quite well up to the present and a seventh after eighteen months of good health has had a return of indigestion.

The remaining two cases present points of interest. One, a patient of Sir Berkeley Moynihan, died of acute pneumonia ten days after the operation, and at the necropsy it was noted that there was active ulceration spreading from the site of the excision and that the intestine contained a quantity of blood.

The other case has already been recorded by Mr. Dobson. Briefly, a large adherent ulcer was excised from the anterior abdominal wall and an anterior gastro-enterostomy with entero-anastomosis performed. Six months later the patient was readmitted. At operation a large jejunal ulcer was found just below the anastomotic opening and adherent to and perforated into the anterior abdominal wall, the scar of the previous excision being quite healthy. The whole of the anastomosis was excised and the continuity of the stomach and jejunum restored. The patient was thus left with a small stomach and without a gastro-enterostomy. She has remained perfectly well up to the present time, a period of three and one-half years. It will be noted that the original ulcer in this case was quite healed and it is probable that the recurrence of symptoms would have been avoided if it had been possible to perform a posterior gastro-enterostomy.

I am quite aware that the number of cases I have had at my disposal is rather too small to lay down any absolute rule as to the best method of treatment of this very serious type of ulcer, but the large proportion of cases in which actual ulceration persisted or recurred after excision and was verified by a second operation makes one doubt very much indeed whether this is an operation which can be recommended.

So far as one is able to judge from my figures excision and gastro-enterostomy produces the best results, gastro-enterostomy alone comes next and excision produces the worst results.

I am well aware that excision of a large ulcer may be an extremely difficult operation and to combine it with a gastro-enterostomy may in many cases entail such a strain on the recuperative powers of the patient, who is not infrequently extremely feeble, as to make it scarcely justifiable.

The difficulty of the wedge excision and the length of time required to combine with it a posterior gastro-enterostomy has led to the suggestion that a certain number of these cases can best be treated by a partial gastrectomy.

My colleague, Mr. Dobson, in the paper previously quoted, describes an operation by which the affected middle zone of the stomach is resected. After ligation of the requisite amount of the gastrohepatic and gastrocolic omenta, the stomach is divided between clamps on the distal side of the ulcerated area and the pyloric pouch closed by suture; the stomach is then turned over to the left and a posterior gastro-enterostomy performed well to the left of the ulcer. Clamps are now applied on the proximal side of the ulcer and the middle portion of the stomach removed. The cardiac pouch is then closed by suture. In cases in which the patient's condition will admit of it this operation is undoubtedly an excellent one and has the advantage over the type of partial gastrectomy which is performed for carcinoma in that it is less extensive and the closure of the pyloric pouch is more easily performed and less liable to be followed by leakage than is the closure of the duodenum when the line of section is distal to the pylorus.

If the conclusions of the Mayo Clinic with regard to the frequency with which carcinoma is grafted on chronic ulcer are to be relied on, it is an operation which should be performed whenever possible. I have been able to ascertain the late results in five patients on whom this operation has been done and they are all in perfect health. In a sixth case in which the middle zone of the stomach was resected and the continuity restored without the performing of a gastro-enterostomy a secondary operation became necessary and was followed by a fatal result. The operation described is one which seems to me to be more likely to give a good result than the resection of the affected zone and restoration of the continuity of the stomach. In suitable cases it can be more easily performed than a wedge excision and gastro-enterostomy and with a better prospect of a complete and permanent cure.

In five cases I have performed a partial gastrectomy, on the lines of the Rodman operation, for cratered chronic ulcer situated on the lesser curvature 1 or 2 inches on the proximal side of the pylorus. The method I employed was precisely similar to the operation for carcinoma, but the resection was not so extensive. One of these patients died as a result of a secondary operation which had to be undertaken to remedy a technical defect at the site of the anastomosis, but the other four patients made an uneventful recovery and at the present time are in perfect health, eating anything and better than they have been for years. There is no doubt that the ultimate results in these cases are better than in any other type of operation performed for chronic ulcer in this situation. Unfortunately a partial gastrectomy cannot be performed for the large ulcer which is found to lie close up to the cardia; a resection would leave insufficient material to allow of closure of the proximal pouch, and the operation would practically amount to a complete gastrectomy.

It is in such a case that the most difficult problem arises, and a solution of the difficulty may be found in a jejunostomy. Robson, Mayo and Moynihan have all drawn attention to the value of this operation; it may be used alone or in combination with a gastro-enterostomy in cases of irremovable ulcer, and by its

means the patient's nutrition may be maintained and improved and absolute rest given to the stomach. The technic of the operation is simple and though I have up to the present employed it in only one or two cases of inoperable gastric carcinoma, I have reason to know that it is an operation which has a certain sphere of usefulness in these very difficult cases of chronic ulcer.

As the result of the work of Robson, Moynihan and the Mayos, much has been done to place the surgery of gastric and duodenal ulcer on a sound basis, and when one looks back over the progress of the last fifteen years one notes its gradual development. The most salient feature of this progress has been the realization by surgeons of the type of case for which operative interference is indicated. At first gastro-enterostomy was confined to the cases which presented the complications of ulcer, stenosis and hemorrhage. As diagnosis improved, the operation came to be performed for the cure of ulcer before its complications became manifest; next it was done for symptoms alone when no naked-eye evidence of ulceration could be discovered, with the result that large numbers of patients were unrelieved and many made materially worse. When we came to realize that pain and vomiting after food did not necessarily mean the presence of gastric ulceration and that unless an ulcer was visible and palpable operative interference with the stomach was contra-indicated, the operation of gastro-enterostomy began to find its true place as one of the most valuable operations in the whole range of abdominal surgery.

The technic of gastric surgery leaves little to be desired, but there are still problems to be solved, and one of the most important is the treatment of the chronic ulcer of the lesser curvature. It may be that a clearer conception of the etiology of gastric ulcer would lead us by a short cut to the solution; but our notions of etiology amount to little more than theories and for the present it is only by a survey of the results of the different types of operation that we can arrive at what we wish to know.

If the paper I have presented to you to-day will assist in some small degree to this end I shall be more than pleased.

ABSTRACT OF DISCUSSION

DR. JOHN B. DEAVER, Philadelphia: I agree with Mr. Collinson. The diagnosis, if made early, before the oncoming peritonitis, is, comparatively speaking, simple, particularly if one can elicit a characteristic history, which, unfortunately, in a small percentage of cases, is impossible. In the majority of the thirty-two cases in which I have operated, with one death, the diagnosis had been made by my house surgeon when I arrived at the hospital. The patients had a clear history of pain after eating, extending over a number of years. One condition I failed to recognize on two occasions—perforation of the base of the appendix. I have seen this condition give rise to the characteristic board-like rigidity, rendering a diagnosis impossible. I have on two occasions withheld the knife on account of the uncertainty and have subsequently operated on these patients for appendiceal abscess. In one of these in which I believed a perforated duodenal ulcer existed I found extensive peritonitis below, and nothing wrong with the duodenum. I closed the abdomen, sent the patient back to bed and with anatomic and physiologic rest, recovery from the peritonitis ensued. My patients were operated on within twenty-four hours, with one exception, the majority in eighteen hours. The fatal case occurred in thirty hours and as Mr. Collinson stated, these are the cases in which the patients die, as a rule, do what one will. Shock is of short duration. When I see the patients ten or twelve hours after the perforation I do not find them in shock. They have a pulse of 72, rarely above 80, but with a board-like rigidity of the abdomen. I go further than the Fowler position; I seat the patients straight up in bed. We all agree now not to irrigate. The procedure is drainage of the pelvis, except in very early cases, a stab wound and a glass tube. I still adhere to the use of the glass tube. One cannot expect as much from a cigaret drain or a rubber tube as from a glass tube. The vital question is whether a posterior gastro-enterostomy should be done when perforation is closed; and whether it, in addition to the closure, is of value to the permanent recovery of the patient. It takes only ten or twelve minutes more; it is one of the simplest operations in surgery for the expert surgeon. It has been argued that there is danger, in opening the lesser peritoneal cavity, of spreading peritonitis. In numerous bacteriologic examinations we have not been able to obtain cultures in early cases, therefore no peritonitis is present and this objection is removed. In certain cases much surgery would be foolish. In addition, if the ulcer is not indurated and practically closes the lumen of the bowel, I plicate the duodenum, at the same time reinforcing the ulcer. I believe a gastro-enterostomy is of value because, first, it relieves tension on the suture, purse-string or otherwise, which closes the ulcer; secondly, it changes the chemistry of the stomach, in that enough bile and pancreatic juice enters to neutralize the hydrochloric acid. The latter and not the drainage, I believe, accounts for the cure in these cases. I have never excised an acute ulcer. .I believe there are few cases in which it is warranted. When the ulcer is close to the pylorus I frequently make a pylorectomy. The majority of these patients recover. The percentage of subsequent perforations I believe is low. On a number of occasions I have referred to a friend who has had three acute perforations, two of the duodenum and one of the posterior wall of the stomach. He had a posterior gastro-enterostomy done when the first perforation was closed. This man recovered from all three operations.

DR. ALBERT J. OCHSNER, Chicago: I believe that the surgeon is responsible in a large majority of these cases of recurrence. It is true that we are not absolutely certain of the cause of the ulcer, or, therefore, of the recurrence, and it is not proper to speak with the same certain feeling so long as we cannot be absolutely sure of the causation. I believe that Dr. Rosenow, of Chicago, has proved or will prove shortly that the cause of duodenal and gastric ulcer is a specific micro-organism which he has found in a large number of his cases and which, when applied properly to animals, has resulted in the production of these ulcers. It is true, however, that in these cases we have practically always vicious habits in the diet of the patient. The patient's history will determine that he has been eating things that would probably produce injury. In a large proportion of these cases we also find a great amount of infectious material either connected with the roots of the teeth, the tonsils, the posterior nares, or the eustachian tubes, so that much septic material is placed in the stomach constantly. This source of irritation should be eliminated. These patients should be taught how to take care of their stomachs after they leave our care. We know, also, that in almost all of these cases there is a period of hyperacidity. For about twelve years I have given each of these patients two carefully worked out diet lists, one to be used so long as this newly repaired lesion is in a fair condition, and with which any one could be satisfied. The other diet is to be used as soon as the patient suffers from the first symptoms of irritation or recurrence. It is similar to that which the internist or specialist in this line employs, namely, a non-irritating diet to which some alkaline substance like milk of magnesia is added. This diet is given every two or three hours, not oftener than every two hours, in order not to have half-digested food and raw food in the stomach at the same time and not at a longer period than three hours so that there shall always be a fairly

alkaline condition in the stomach so long as there is any irritation. In following this plan we have found that the jejunal ulcer has been eliminated in over 95 per cent. of the cases. We have had less than 2 per cent. of cases in which we have had a jejunal ulcer, and the proportion of recurrence is, I should say, not one-fourth as great as in the histories mentioned.

Dr. John M. T. Finney, Baltimore: I am compelled to dissent from much that I heard Mr. Collinson say. It seems to me that the procedure suggested by him and advocated by Drs. Deaver and Ochsner is not the rational procedure in the premises. In perforative gastric ulcer the majority will be on the anterior wall close to the pylorus. Therefore, why not enlarge the already existing hole a bit and excise the ulcer, the pathologic process which gave rise to the perforation, and then enlarge the pylorus sufficiently by means of a pylorectomy so that there can be no possibility of its subsequent cicatricial contraction, which might necessitate a subsequent operation of gastro-enterostomy? If it be true that gastric ulcer is an important predisposing factor in the subsequent production of cancer, it is an additional argument in favor of getting rid of the process. It seems to me that these two arguments are sufficient to weigh down the balance in favor of the operation of pyloroplasty. I do not know whether Mr. Collinson mentioned that as a possibility. I refer you to a paper read by me in Chicago last fall which gives the statistics of 100 pyloroplasties performed by my assistants and myself. I want to insist that, in the first place, pyloroplasty is a more rational and more satisfactory operation than gastro-enterostomy. Now that may not be true in the hands of my colleagues, Drs. Deaver and Ochsner, and in the Leeds clinic where the operation of gastro-enterostomy is so well done. I am speaking of the general run of surgeons of the country. A deep-rooted feeling exists among the profession at large that gastro-enterostomy, while it works in the majority of cases, yet in general shows a large percentage of unsatisfactory results. I want to call attention to the fact that pyloroplasty, when properly performed, will do all that a gastro-enterostomy will do and more. If it is drainage that does the work, it affords drainage almost at the most dependent portion. If it is a chemical process that does the work then the reversed peristalsis causes the presence in the stomach of the contents of the duodenum. I have come to the conclusion that gastro-enterostomy should never be an operation of choice. It is only an operation of necessity. That means under all circumstances. I never perform it except when I cannot do a better thing. I noticed, too, an undercurrent of dissatisfaction with the results reported. It appeared that there had been a large number of recurrences. I would recommend excision of the ulcer through a pyloroplasty and then see what the results will be. I have found that, in a good many cases, the ulcer is situated on the posterior wall. It is impossible there, for obvious reasons, to excise it. The reason old chronic ulcers elsewhere don't heal is because of the dense fibrous tissue in the base which cuts off the blood-supply. In dealing with leg ulcers, for instance, I have found, for years, that if crucial incisions are made deep through the base of the ulcer, immediately granulations spring up and the ulcers will heal in an incredibly short time. I have done the same thing in gastric ulcer in the posterior wall, made crucial incisions in the base. If there was hemorrhage I stopped it with catgut suture. I have found that these ulcers do much better with this than any other form of treatment. Care must be taken, however, not to make the incision too deep.

Mr. Harold Collinson, Leeds, England: I feel that it is unwise to say that in operating for an acute abdominal condition a certain procedure should be invariably undertaken and so I cannot go all the way with Dr. Deaver in his advocacy of a primary gastro-enterostomy. Dr. Deaver's cases were almost all early and these are the ones in which to perform gastro-enterostomy; but there are some in which a gastro-enterostomy would be absolutely unjustifiable. By the Fowler position I meant exactly what Dr. Deaver has described, one in which the patient is sitting straight up, a position we adopt almost invariably in cases of peritoneal inflammation. Dr. Ochsner drew attention to the need for careful postoperative treatment in all cases of operation on the stomach; there is a tendency to believe that as soon as a short circuiting operation is performed the patient may be left to his own devices; this is not so, for considerable care in diet is necessary for some time. I was interested in Dr. Finney's remarks with regard to the operation which he has practiced and the results of which in his hands have been so successful. Quite recently at Rochester I saw a similar operation performed by Dr. Charles Mayo and Dr. Judd and I shall take the first opportunity of combining it with an excision for a lesser curvature ulcer or for ulcer on the posterior surface of the stomach.

THE AUTOSERUM TREATMENT IN DERMATOLOGY *

WILLIAM S. GOTTHEIL, M.D.
AND
DAVID L. SATENSTEIN, M.D.
NEW YORK

It is a common criticism of the dermatologic specialty that it busies itself so largely with the purely scientific aspects of its field, and so little with the practical results that justify its existence. Medical men find that in our cutaneous journals and special societies we have much to say on minute points of pathology and microscopic findings, and that we are strong on differential diagnosis or rather on questions of terminology that we mistake for questions of diagnosis; but that we are strangely reticent on treatment, and rarely have anything that is generally useful and practical to suggest. In one sense this criticism is unjust; it has not been for want of effort that dermatotherapeutics has been for many years a comparatively unfruitful field. In another, however, it is merited. One of us (W. S. G.) looking back on the quarter century during which he has been more or less intimately connected with the specialty, finds but very few facts that can be justly said to be distinct and permanent steps forward either in our understanding of the nature of many common dermatoses, or in our means of curing them. To take a few of the commonest of the diseases of the skin: What can we do in eczema, psoriasis and lichen planus that our fathers could not do, and what more than they do we know of their real nature? Endless study and experimentation has led in most cases to an impasse.

It was therefore with considerable skepticism that we read the reports that have been published during the last year or two concerning the treatment of certain dermatoses with serum, autogenous or foreign; and the more so since these reports in some cases were of that very rosy hue which we have learned to know as the reflection of the subjective illumination of the observer. Here are a few of them:

Veiel[1] records a severe case of herpes gestationis, coming on very intensely toward the end of pregnancy, and resisting all treatment; he injected the serum of a healthy gravida, with temporary improvement. After a second injection of twice the amount there was very marked improvement, rapid disappearance of the itching, and cessation of the bulla formation.

* Read before the Section on Dermatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Veiel: A Contribution to the Serum Treatment of Pregnancy Dermatoses, München. med. Wchnschr., 1912, No. 35.

Rübsamen[2] had two cases, one of severe pruritus due to pregnancy toxemia and the other a pustular herpes gestationis in childbed, which he cured by the injection of the clear blood-serum of healthy gravid women. Rongy[3] has recorded good results in pregnancy pruritus from the same means. In these cases a foreign and not autoserum was employed; and in the toxemic symptoms of pregnancy, including those appearing on the skin, the serum treatment seems to have definitely established its value.

Pretorius[4] gives an account of a woman suffering from a severe chronic pemphigus, which he had long watched and treated. She was given 20 c. c. of blood from her husband; in eight days she was cured, and had had no relapse in eight months.

Spiethoff[5] records good results in dermatitis herpetiformis, chronic urticaria, prurigo, psoriasis and chronic eczema from the autoserum.

Linser[6] has used human serum (whether autogenous or not we do not know) with brilliant results in a case of herpes gestationis. In four cases of chronic urticaria he reports startling and immediate results fifteen minutes after the injections, fifteen out of his eighteen urticaria patients were cured by from two to three injections. Twelve prurigo patients were much improved by the injections, and, finally, from four to six months later, were nearly all cured. He obtained especially good results in pemphigus and dermatitis herpetiformis, and also in the eczemas of children.

Ullmann[7] used autoserum injections in eighteen itchy dermatoses, without other treatment. In seven cases of dermatitis herpetiformis he obtained no results; in two cases of generalized eczema in children be obtained no results from the injections, but exceptionally good and quick results as soon as local treatment was instituted; three urticarias were improved but not cured; four cases of pruritus were cured, and one prurigo was much improved.

The results reported above, though conflicting in some respects, were sufficiently impressive to lead us without attempting any complete review of the literature of the subject to take up the matter last fall in the City Hospital of New York. Our facilities there for clinical experimentation of this kind are especially good. Twelve cases were treated there, six of very extensive general psoriases, three of generalized eczema, two of pemphigus, and one of leprosy. The records have already been reported.[8] Since that time we have obtained records of six private cases of psoriasis, two cases of radiodermatitis, and one each of chronic urticaria, pustular acne with dermic abscesses, furunculosis and lichen planus. That this list is a comparatively small one is due to various factors. The process of treatment is rather troublesome, and above all, takes care and time. In the busy hospital, with many demands on the laboratory and house staff, it was difficult to arrange for the proper treatment of any long series of cases. In private practice other factors, such as the idiosyncrasies of the patients, and the question of expense, naturally interfered. What interests us here more especially is first, the results, and second, the method to be employed. We shall consider the latter first.

To those experienced in intravenous medication technic, this presents no difficulties, the only additional apparatus required being an efficient electric centrifuge and some platinum needles. The ordinary centrifuge will not do, since it is too slow and it would take too long to separate the serum thoroughly. An electric machine capable of making at least 4,000 revolutions a minute is required; this will thoroughly separate the serum in about half an hour. The tubes should be large enough to hold about 200 c. c. of blood; we employ four of about 60 c. c. capacity apiece. It being desirable to avoid all possible transfers of the blood and serum, we draw the blood directly into the centrifuge tubes. A platinum needle of large caliber is used for the venipuncture; this is much smoother on the inside than the steel needles, and very much more fluid can be obtained before occlusion occurs; besides this, the needle can be more readily and thoroughly sterilized in the flame. It is well to have one or two extra venipuncture needles in reserve, so that no time is lost in resterilizing, if necessary, and so that two needles can be introduced simultaneously if the flow is too slow. One of the minor difficulties encountered in our first work in the hospital was the trouble in obtaining the requisite amount of blood with needles of the ordinary caliber and material; as a rule not more than from 15 to 20 c. c. could be obtained from one puncture, and the flow was very slow. With the platinum needles we can obtain 200 c. c., the largest amount hitherto drawn, in from three to ten minutes, depending on the blood-pressure; in some cases the flow from the vein is in a continuous stream and not in drops.

The blood is allowed to clot thoroughly, which takes about ten minutes; the clot is then well broken up with a glass rod, and centrifuged at high speed. In the electric centrifuge at about 5,000 revolutions a minute this takes from thirty to forty minutes. In a slower, water-driven or hand centrifuge it would take much longer, which is an additional objection to their use; the serum should be reinjected within about an hour after the blood is drawn. All utensils coming in contact with the blood or serum should be cool.

The amount of blood drawn has varied from 40 to 200 c.c., usually the latter amount or an approximation to it; and the serum recovered has been from 40 to 45 per cent. of this quantity. We had little to guide us as to dosage in the beginning. The German investigators usually employed from 25 to 60 c. c. of serum at a dose, some of them asserting that exactly the same results were obtainable from the smaller as from the larger amounts.

The serum recovered is injected into a vein, usually on the other side from that from which the blood is drawn, and the operation is completed. We use an ordinary salvarsan needle for the reinjection.

We have now given over 250 of these autoserum injections, without seeing, save in a single case, any contra-indications to their employment. The patients feel no effects at all either from the drawing of the blood or from the reinjection of the serum; they go back to their occupations as soon as the operation is completed. The one exception was in a very bad case of gangrenous radiodermatitis, in a case of leukemia in which the patient did marvelously well under the first four, but had a reaction, and chills followed by

2. Rübsamen: A Further Contribution to the Serum Therapy of Pregnancy, Deutsch. med. Wchnschr., 1913, No. 20.
3. Rongy: New York State Jour. Med., January, 1914.
4. Pretorius: Pemphigus Malignus Cured by a Single Intravenous Blood Injection, München. med. Wchnschr., 1913, No. 16.
5. Spiethoff: On the Therapeutic Use of Autoserum, Deutsch. med. Wchnschr., Oct. 18, 1913; On Treatment with Autoserum and Autoblood, Arch. f. Dermat., January, 1914.
6. Linser: Dermat. Wchnschr., Oct. 18, 1913.
7. Ullmann: Arch. f. Dermat., September, 1913.
8. Gottheil, W. S., and Satenstein, D. L.: Autoserum Injections in Certain Obstinate Dermatoses, Med. Rec., New York, 1914, lxxxv, 620.

fever after the fifth and sixth, which we took to be attacks of serum sickness due to the sensitizing of the organism by the previous injections. We have never seen any similar occurrence in another case, no matter how many injections were administered.

Following is a brief summary of the results so far obtained: The cases were eighteen in all, twelve of psoriasis, two radiodermatitis, and one each of furunculosis, pustular acne and dermic abscesses, chronic urticaria, and lichen planus. To take the last first, the pustular acne has been very markedly improved, is still under treatment, and is nearly cured; and the urticaria, lichen planus and furunculosis got much better while subjected to it. One of the radiodermatitis cases was a gangrenous one, and the result here was not to be described as otherwise than astounding. The details have been given elsewhere. The patient was apparently in a hopeless condition; he was constantly under opiates, could hardly get out of bed, and the sloughing ulceration had been almost unaffected by the various local and general measures that had been tried. The result of even the first injection was the rapid throwing off of the necrotic tissue, beginning cicatrization of the ulceration, cessation of the agonizing pain and the tenderness, and a rapid convalescence. This was the patient who had the symptoms of serum sickness after his fourth injection; the treatment was stopped in consequence of it; at present the patient is perfectly well and attending to his business; the ulceration is three-quarters healed, healthy, and slowly closing up under ordinary surgical local treatment.

While in these various affections our results have been only partially satisfactory and of a nature that enables us to say only that the autoserum injections deserve further trial in these and kindred diseases, in psoriasis they have been uniform, and extremely satisfactory. We have now twelve carefully observed cases on record, all of them of the severe and extensive type of the disease. Many of these patients had had psoriasis for many years or all their lives, so far as they could remember; some of them had had repeated courses of treatment without any noteworthy results, or with partial or very temporary results; some had been treated for half a lifetime without benefit, and others had long given up all attempts to cure the disease. One and all were enthusiastic for the treatment, and one at least has voluntarily asked for another course of the injections to prevent the possibility of a relapse. On the latter point we have as yet nothing to say; the time has been too short; many of the patients have disappeared, which an enthusiast might take as evidence that they needed no further treatment.

These patients were given from four to six autoserum injections at intervals of from five days to one week, during which time they were not hospital patients or confined to bed, but could pursue their ordinary avocations. During this time also no local treatment other than ordinary baths and soap frictions were employed. In most cases the efflorescences became paler and less elevated, and showed signs of beginning retrogression. Then, at the end of the serum course, treatment with a weak chrysarobin petrolatum, 2 or 3 per cent. for the body, and an equally weak white precipitate ointment for the head and hands, was begun. In from three to eight days every lesion had disappeared, with but very little if any dermatitis from the medication. This also has been the case with gigantic indurated plaques of years' standing, and with patients who have been treated *secundum artem* many times without effect, or who had had their bodies cleaned before at the expense of six weeks treatment with 40 per cent. chrysarobin ointments, violent dermatites, and the administration of arsenic in very large doses. Those who had been through cures before, or who had given up their cases as hopeless, were loudest in their praise of the new method.

Questions as to the theory on which these injections are employed, which are asked by every patient and by every physician, have to be answered in the main by a confession of ignorance. So long as we are unaware of the real nature of most eczemas, of psoriasis, of lichen planus and other common skin affections, our therapeusis is necessarily empiric and based on the experience of accident. In view, however, of the great development and refinement of microscopic technic in recent years, we are justified in regarding it as probable that there are no micro-organic causes for their occurrence; any such would probably have been discovered by the unremitting work that has been devoted to them by multitudes of investigators. We must look to some change in metabolism, to some derangement of the internal economy, for their explanation. Nor does it seem likely that any metabolic change of the grosser sort will be found at fault; these have been thoroughly investigated, and have thrown no light on the subject.

The most promising field of investigation into the etiology of the still mysterious dermatoses is that of the internal secretions. In that as yet little known domain there are certain well known facts that are worth noting in this connection. The bronzing of the skin and mucosae and the falling of the hair in Addison's disease are admittedly due to derangement of the suprarenal glands. The thickened, white, cold and always dry condition of the skin in myxedema, together with the brittleness of the nails, falling or premature whitening of the hair, with irregularities in the development of the teeth, are recognized results of disturbances in the thyroid glands, and are remediable by the administration of thyroid extract. Thyroid hypersecretion, giving us the symptom-complex known as Basedow's disease, makes the skin smooth, thin and moist, and the nails and hairs brittle. Scleroderma is ascribed by some authorities to dysthyroidism; and a connection between the two conditions in certain cases at least cannot well be denied. Alopecia areata, occurring as it does usually at adolescence or at the climacterium, is thought with some reason to be in some way connected with the hyperactivity of the generative glands; and the hypothesis has been evolved that the mysterious and characteristic premature alopecia that occurs so commonly in the male at the time of the greatest activity of the reproductive organs may be in some way connected with their internal secretion. With persistent thymus, the so-called status thymuslymphaticus, there are frequently changes in the skin and its adnexa; the integument is pale, and there is often either a heterosexual hair-growth, or these structures are partly or entirely undeveloped. In acromegaly, dependent on increased secretion of the pituitary gland, the skin is usually thickened and pigmented, the sweat increased, and the hair development either deficient or very abnormally increased. The dystrophies of heredosyphilis are not to be explained on

the theory of a direct action of the invading organism, and may possibly be secondary effects due to dyssecretion of the endocrinous glands. It can hardly be denied that there is some relationship between either unusually active or deficient internal secretion of the ovary and testis in such conditions as acne juvenilis, chloasma uterinum, and the various menstrual, pregnancy and parturition exanthems. In diabetes, changes of the skin and its adnexa are common; the bronze diabetes and xanthoma are extreme instances.

Cederkreutz,[9] in a recent review of the subject, believes it possible that there is an internal secretion proper to most or all of the body-tissues; that their action and correlation deserve careful study; that the idea of Claude and Gougerot that an *insuffisance pluriglandulaire*, and not a derangement of a single secretion may be the basis of skin changes, has much plausibility, and that, in addition to the affections already mentioned, the internal secretions offer us the most hopeful field for investigation as to the etiology of vitiligo, psoriasis, ichthyosis, lichen planus, pruritus senilis and xeroderma pigmentosum.

Psoriasis is perhaps the most mysterious of the common dermatoses. Schamberg's elaborate studies seem to point to nitrogen retention in the system as a factor in its etiology, and the results of an absolutely meat-free diet in some cases is well known to all of us. Occasional cases seem to be dependent on mental conditions, such as worry and overwork. But in the vast majority of cases we are entirely at a loss to ascertain its cause. On the other hand, the administration of thyroid extract and epinephrin has done good in some cases. It seems very unlikely, with the history of the affection and the unending efforts that have been made to find it, that a microbic cause will be found. Some derangement of the endocrinous secretions seems to be the most promising field for future etiologic investigation.

We are naturally not in a position to say much as to the action of the blood-serum when administered in the way that we have described. It is more than probable that the blood-serum reinjected is by no means just the same material that was withdrawn in the previous bloodletting. Blood-serum is an extremely complex material, and it is undoubtedly changed by its retention for a time outside the body, by the coagulation and centrifugation. The fact that in one case we saw distinct attacks of serum sickness follow its administration is proof of the fact. There can be no doubt that its administration in some way alters the sensibility of the skin, increasing its susceptibility to local medication, and at the same time diminishing its liability to the growth of psoriatic efflorescences and to reactive inflammation. How this is effected, whether by supplying a deficiency of some material elaborated by the endocrinous glands, or by stimulating one or more of them to renewed activity, or by supplying some material required for their action, we are unable to say.

One further point deserves mention. Is it possible that the good results attained are due to the bloodletting alone? The thought has often struck me, as it must have struck others, that the generations of acute observers and habile clinicians who practiced bloodletting in so many affections cannot have been entirely wrong; they must have seen some good result in some cases at least. And there is at least one case of psoriasis on record, to which our friend Dr. P. Brynberg Porter has called our attention, in which the late Weir Mitchell in his young days, being left in charge of a very bad case of psoriasis and not knowing what to do, put the patient to bed and bled her every day, and cured her disease. Bloodletting alone, however, has been tried, and has not given results. We do not think that the benefits of the procedure can be ascribed to it.

154 West Seventy-Seventh Street—155 West Forty-Seventh Street.

9. Cederkreutz: Praktische Ergebnissen auf dem Gebiete der Haut- und Geschlechtskrankheiten, A. Jesionek, 1914.

ABSTRACT OF DISCUSSION

DR. HOWARD FOX, New York: My attention was first called to this subject by a demonstration given by Dr. Gottheil before the Manhattan Dermatological Society in New York. Two cases of psoriasis were shown in which the therapeutic results impressed me as remarkably good. A little later I saw a further demonstration of this method in Dr. Fordyce's service at the City Hospital, and was again impressed favorably. I then took up the work myself and within the past few months have treated thirty cases by autoserum, twenty-five of these being patients suffering from various forms of psoriasis. All of my patients with psoriasis were given three injections of serum at intervals of a few days, followed in every case by local inunctions of chrysarobin, and at times, in addition, by covering the lesions with rubber cloth. The results of this serum treatment have been unusually good and in some cases truly remarkable. The crucial test of the serum treatment is when it is applied to patients who have previously been treated in vain by the recognized methods, such as the local use of chrysarobin, diet, etc. A number of refractory cases in which the patients had been treated for a considerable time by my father and myself by various methods, cleared up after the combined serum and chrysarobin method in a most astonishing and gratifying manner. Whether the results will be more permanent than heretofore it is of course impossible to say. Some other obstinate dermatoses were also treated, including eczema, lichen planus and dermatitis herpetiformis. In one case of the last-mentioned disease, of six months' duration and moderate severity, the condition had not been benefited in the least by the use of tar, sulphur and other ointments. Two days after the third injection of autoserum, no other treatment being given, there was an immediate cessation of all itching, and from that moment a rapid disappearance of the lesions. My technic consisted in withdrawing 50 c.c. of serum at each sitting, and injecting as much serum as could be obtained by prolonged centrifuging. The serum was generally injected intravenously; at times intramuscularly. I believe that in the autoserum we have a valuable aid in treating one of the most obstinate of chronic skin-diseases, namely, psoriasis.

DR. JAMES M. WINFIELD, Brooklyn: We have been studying the autoserum injection method of treatment in the other large charity institution in Brooklyn, and one of the most startling results we have thus far obtained has been in a case of pemphigus. After the initial injection the condition was aggravated; the second injection produced no noticeable effect, but after the third dose a steady improvement began. In psoriasis our experience was similar to that of Drs. Gottheil and Satenstein. We did not withdraw as much blood and we did not follow the injections with vigorous chrysarobin inunctions, but our results were excellent. I think the subject is a vast one and the treatment is bound to be of benefit in skin-diseases. In psoriasis we know that any new method of treatment may effect an apparent cure, and the question is whether or not the improvement after this method will be permanent. We must keep these patients under observation and see if the cure will be more lasting than that accomplished by other methods.

DR. JOHN A. FORDYCE, New York: I have employed this method at the City Hospital and the Vanderbilt Clinic, as well as in my private practice, in psoriasis, in chronic recurrent urticaria, in dermatitis herpetiformis and to some extent in pemphigus. I have had encouraging results in a number of

cases of psoriasis, notably in one patient, who had an acute generalized psoriasis develop on a chronic psoriasis. She had never been absolutely free from the disease for years. After she had received five intravenous injections of autoserum the eruption improved. She was then put on a 2 per cent. chrysarobin ointment, and within forty-eight hours the eruption disappeared entirely. That was about two months ago, and since then she has had a few slight recurrences. My most impressive result by this method was in a case of dermatitis herpetiformis, with most intense and persistent multiform lesions, with vesicles and bullae. The patient, a girl, was compelled to give up her position on account of the severe itching, with insomnia and loss of weight. After the first two injections of autoserum the lesions increased in number and the itching became more intense—so much so, in fact, that the patient objected to further treatment, but after some urging she was given three more injections and then put on a mild calamine lotion. Within a week the eruption, together with the itching, had practically disappeared, and she was able to resume her work. Recently, she had a slight recurrence and she is now receiving a second series of injections. Those two cases show the most striking effects of the treatment that I have seen. I have also tried it in chronic persistent urticaria, but have not been so much impressed with its value. In one case of angioneurotic edema of the cheek the autoserum did not have much effect, but the method is worth trying. I think the technic described by Dr. Gottheil can be improved if he will use a MacRae needle attached to a large centrifuge tube. It is very easy then, by producing a vacuum in the tube, to permit the blood to run through.

DR. WILLIAM THOMAS CORLETT, Cleveland: Two cases of dermatitis herpetiformis have been under my observation for the past year. The first one was treated with normal salt solution injected into the veins every third day for a period of three weeks. When I recently heard of the method of treatment described by Dr. Gottheil I had under my observation a case of dermatitis herpetiformis in a woman who had recently miscarried. When she was admitted to the hospital we were able to withdraw only about 40 c.c. of blood, from which, approximately, 20 c.c. of serum were obtained. This was injected intramuscularly the following morning; in a few days there followed marked improvement. On account of the patient's anemic condition we have not been able to repeat the injection. To lessen the danger of extraneous infection a suggestion of Dr. Cole was followed which modified the technic by placing the blood in an incubator over night and decanting the serum on the following day.

DR. CHARLES J. WHITE, Boston: At the Massachusetts General Hospital we have taken the blood from a healthy person and injected it "whole" into the patient. We have tried this in cases of rebellious eczema and in dermatitis herpetiformis without any striking success.

DR. M. L. HEIDINGSFELD, Cincinnati: I have had considerable personal experience with serum treatment in chronic dermatoses, using heterogeneous serum, subcutaneously, after the method described by Dr. White, and have obtained good results, particularly in dermatitis herpetiformis (Duhring) and some of the chronic persistent forms of dermatitis. It has failed utterly, however, in some particular types, notably the chronic bullous dermatitis of several years' duration, following vaccination.

DR. WILLIAM S. GOTTHEIL, New York: We are well aware that the autoserum injections alone do not cure psoriasis, though in almost every case there is a distinct and in some cases a very marked improvement under their use alone. They affect the skin in some as yet undetermined way, possibly through their influence on one or all of the internal secretions, so as to lessen the appearance and growth of the psoriatic efflorescences and to render the integument more susceptible to the ordinary remedies. After their administration we get marked and very rapid results from very weak local applications, and complete the cure, so far as the immediate lesions are concerned, in a very few days. That the serum undergoes some change while outside the body is undoubted, both from its effects on the efflorescences and on the subsequent local treatment, and from the marked anaphylactic reaction that we have observed in several cases. The integument apparently becomes sensitized to the proteins of its own blood or corpuscles after a few injections. In view of the complexity of the organochemical reactions that go on in the blood when withdrawn from the body, and of our small knowledge of their exact nature, we consider it dangerous at present to keep the blood for any prolonged period before reinjecting it, as was done by Dr. Cole in the case mentioned by Dr. Corlett. So far, an hour and a half is the limit of time that we have allowed to elapse before reinjection.

DR. H. N. COLE, Cleveland: In the case cited by Dr. Gottheil, neosalvarsan was mixed with the serum and kept over night. There is no danger in keeping the unmixed serum over night.

ROENTGENOLOGIC OBSERVATIONS ON THE FUNCTION OF THE ILEOCOLIC VALVE

WITH SPECIAL REFERENCE TO THE CAUSATION OF ILEAC STASIS *

JAMES T. CASE, M.D.

Lecturer on Roentgenology Northwestern University Medical School, Chicago; Roentgenologist and Assistant Surgeon to the Battle Creek Sanitarium, Battle Creek, Michigan; Roentgenologist to St. Luke's Hospital, Chicago

BATTLE CREEK, MICH.

The subject of intestinal stasis, particularly ileac stasis, has recently aroused much interest and not a little controversy. Most of the discussants are agreed as to the significance of ileac stasis, but the mechanism of its causation, and, consequently, the choice of methods aimed at its relief, has been the subject of much theorizing and controversy. Enteroptosis, adhesion bands, various pericolonic membranes, intestinal kinks, cecum mobile, and typhlatony have been among the causes named; but the instances in which ileac stasis exists without any demonstrable bands or kinkings are so numerous it seems some other cause must be found to explain the stagnation.

It is, therefore, important to determine, if possible, the correct basis on which to build the argument relating to the causation of ileac stasis. If the case be the kinking of the terminal ileum or some similar lesion and it is conceded that, in comparatively rare cases, obstructing kinks and adhesions do occur, careful consideration must be given the recommendations for serious surgery which seem to be indicated. On the other hand, if the ileac stasis be dependent on some other and simpler cause as, for instance, ileocecal sphincter spasm or incompetency of the ileocecal valve, there will be little indication for hazardous surgery.

For several years (since 1910) I[1] have been urging ileocolic valve incompetency as an explanation of a large share of these cases of ileac stasis. In September, 1912, I reported a series of 200 gastro-intestinal cases,[2] most of the patients being constipated, in which 33, or 1 in 6, showed ileocecal valve incompetency when tested by the bismuth enema. In August, 1913, I reported a much larger series of 1,500 persons,[3] tested by means of the bismuth enema, in which nearly 250, or again 1 in 6, showed ileocolic valve incompetency. It should be emphasized that this

* Read before the Section on Pathology and Physiology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Case, James T.: Proc. Am. Roentgen-Ray Soc., 191.
2. Case, James T.: Tr. Am. Roentgen-Ray Soc., September, 1912.
3. Case, James T.: Proc. XVII. Internat. Cong. of Med., Section on Radiology, London, August, 1913; also in Med. Rec., March 7, 1914.

large series of patients were all suffering from gastro-intestinal symptoms and most of them were seeking relief from constipation. I have now found more than 500 cases of ileocolic valve incompetency, the frequency of occurrence remaining about 1 in 6 of the cases examined.

The anatomists describe the ileocolic valve as formed by partial inversion or telescoping of the ileum into the cecum. The end of the small intestine is invaginated through the wall of the large bowel, carrying with it certain layers of that wall which project into the cecum as two folds, lying, respectively, above and below its orifice and constituting the two segments of the ileocecal valve. The peritoneum and the longitudinal muscular fibers of the bowel do not take part in this infolding, but are stretched tightly across the crease produced on the exterior by the inversion, thus serving to preserve the fold and the formation of the valve. According to Cunningham, whose description has just been given, the efficiency of the ileocolic valve is largely due to the oblique manner in which the ileum enters or invaginates the cecum, and he states that, in the great majority of instances, when in position within the body, the ileum is perfectly protected from a return of the cecal contents. In fact, anatomists are almost unanimous in thus considering the normal ileocolic junction a barrier against a reflux of cecal contents.

According to Arthur Keith[4] there are muscular fibers situated directly at the ileocolic orifice which are evidently designed to secure that orifice from reflux from the cecum. In addition to the sphincter action of the circular muscles included in the valve itself, the last few centimeters of the terminal ileum present a distinct thickening of the circular muscular coat which seems to be endowed with a special tonic function; it serves as a sphincter for the terminal part of the ileum. This sphincter relaxes in front of the peristaltic wave, allowing the passage of food into the colon, but, on the other hand, it contracts, as a rule, against any regurgitation which might be caused by contractions in the colon. In marked contrast to the rest of the bowel in its relation to the central nervous system, the ileocolic sphincter is not affected by vagus stimulation. According to Elliott, stimulation of the splanchnic nerves causes complete relaxation of the terminal ileum and produces a strong contraction of the ileocolic sphincter. These statements are based on the current teachings relating to the anatomy and physiology of the ileocolic junction.

It thus appears that the ileocolic junction is possessed of a double function, namely: (1) a sphincter action which controls the passage of ingested food from the ileum into the colon and tends to protect the ileum from a reflux of cecal contents; (2) a valve action which is probably purely mechanical, guarding against reflux back into the ileum. Much of the force of the arguments relating to ileocolic valve incompetency as a factor in the causation of ileac stasis hinges on the determination of whether or not the ileocolic valve is normally competent.

Most anatomists and physiologists have thus far agreed that the valve is normally competent. The work of Cannon and others on antiperistalsis adds importance to the conception of normal ileocolic valve competency. Our present-day conceptions of the functions of the ileum and of the colon point to the need of such a barrier. My Roentgen-ray studies on colonic peristalsis and antiperistalsis confirm, almost to the minutest detail, Cannon's deductions from Roentgen-ray observations on animals.

Bull,[5] in 1878, after a careful series of experiments, stated his belief that, in the living body, fluid could not be forced beyond the ileocolic valve, but when the bowel was overdistended by air the valve was rendered incompetent and the air entered the small intestine. Dawson,[6] in 1885, experimenting on the cadaver, concluded that the ileocecal valve, when normal, effectually guards the small intestine from gas and fluid from below. Ziemssen[7] recommended inflation of the rectum as a means of diagnosis and treatment by "special procedure," the patient being placed under anesthesia. He states that ordinarily the small intestine is closed to the return of material from the cecum by the ileocolic valve, but under deep chloroform anesthesia this resistance is decreased and fluid can be forced into the small intestine. Heschl,[8] after a number of experiments, agreed with Ziemssen as to the normal barrier function of the valve.

On the other hand, a few observers, such as Cantani,[9] firmly believed that the ileocolic valve was permeable to fluid injections and suggested that the small intestine be utilized in cases of rectal alimentation. In one instance in which he treated acute bowel obstruction by injection of oil, half an hour later a part of the oil was vomited. Ziemssen records a similar case in which a fistulous connection between the colon and the stomach was suspected because the patient vomited oil shortly after an oil enema. Hemmeter, Church, and Gruetzner[10] have all conducted experimental work which supports the idea that, in certain cases at least, the ileocolic valve permits the reflux of material from the colon. Yet Boyd[10] makes the statement that the reflux of fluid through the ileocolic valve cannot, in every case, be expected, and that he has frequently failed to find insoluble substances, such as charcoal, in the gastric contents, in cases in which charcoal had been added to the nutrient enemas.

Illoway[11] reports four cases of intestinal obstruction treated by forcing water past the ileocecal valve, with recovery in three cases. In this connection it is proper to refer to the experiments of Senn[12] who, discussing the use of rectal injections in overcoming bowel obstruction due to invagination, concluded that, when the obstruction is located beyond the ileocolic valve, no reliance can be placed on this method. Senn based this statement on carefully conducted experiments on animals in which fluid was forced beyond the ileocecal valve. In two cases post-mortem examination revealed longitudinal lacerations of the muscular coat of the rectum. A third animal died immediately after the experiment from the effects of the injection. Further, but less crucial, experiments were carried on in man. Senn concluded that "the forcible injection of water beyond the ileocolic valve must therefore be recognized as a dangerous expedient and should never be resorted to."

Senn further states, however, that, in the healthy adult, the competency of the ileocolic valve is overcome by rectal inflation under a pressure of from

4. Keith, Arthur: Proc. Roy. Soc. Med., April, 1913 (supplement).

5. Bull: Virchow's Jahresbericht, 1878, ii, 205.
6. Dawson: Lancet-Clinic, Feb. 21, 1885.
7. Ziemssen, quoted by N. Senn: Experimental Surgery, 1889.
8. Heschl: Zur Mechanik diastaltischen Darmperforationen, Wien. med. Wchnschr., 1881, No. 1.
9. Cantani: Virchow's Jahresbericht, 1879, ii, 180.
10. Quoted in Sutherland's System of Diet and Dietetics, 1908, p. 287.
11. Illoway: Am. Jour. Med. Sc., xli, 168.
12. Senn: Experimental Surgery, 1889.

1½ to 2¼ pounds, and that this amount of pressure is not sufficient to injure the bowel. Behrens agrees with Senn in this statement. The incompetency of the valve is caused in cases of overdistention by a lateral and longitudinal distention of the cecum which mechanically separates the margins of the valve.

In 1897, Max Hertz[13] of Vienna, while practicing abdominal massage on a patient for abdominal pains, observed peculiar symptoms, which after further study on other cases, led him to describe a symptom-complex of insufficiency of the ileocecal valve. In 1910, and on numerous occasions since, I have demonstrated, roentgenologically, the retrograde filling of the ileum after bismuth clysmas. Holzknecht and Singer,[14] in 1911, mentioned the relatively frequent occurrence of ileocecal valve incompetency in connection with chronic obstipation. In 1912, Groedel[15] reported insufficiency of the ileocecal valve and submitted roentgenologic evidence. In 1913, Groedel[16] continued his discussion of ileocecal valve incompetency and there appeared papers by Dietlen,[17] Kellogg,[18] Reider, Schwarz,[19] Katsch[20] and myself.[21]

From certain quarters, however, have come expressions of doubt as to the serious significance of ileocecal valve incompetency, and skepticism has been expressed concerning the normal competency of the valve. I therefore wish to tabulate at some length a series of findings, most of them roentgenologic, which seem to indicate that the ileocecal valve is normally competent, protecting the ileum from a reflux of cecal contents.

1. The ileocecal valve is almost universally present in vertebrate animals (Kellogg[18]). I have found the ileocolic valve of the dog and of the pig competent, withstanding enormous distention of the colon by gas. The following surgical operation on a dog is submitted as further evidence of the competency of the ileocolic valve, at least, in the dog. The pelvic colon and the ileum were so divided and reinserted that the course of the food was from the ileum into the descending colon, then through the transverse, the ascending, and through the ileocolic valve and the last 10 inches of the ileum into the pelvic colon and rectum. Dr. D. B. Phemister, who performed the operation, reported that the dog died of intestinal obstruction thirty-six hours later, intestinal contents having accumulated on the distal side of the ileocolic valve, which remained thoroughly competent.

2. A young man was given a silk string 9 meters long, one end of which he swallowed. At the end of twelve hours, the string had transversed the entire gastro-intestinal tract. By means of the bismuth enema, I tested the valve competency on two separate occasions before introducing the thread, and again after the thread was in place, and found that the valve was thoroughly competent. Then, for the purpose of an experiment on electrical stimulation of the bowel, the thread being used as a guide, a metal electrode was introduced as far as the upper end of the descending colon, incidentally considerable traction being made on the thread in an unsuccessful effort to pass the sound around the splenic flexure. Roentgenograms made a few moments later showed the terminal ileum filled for a considerable distance. This was attributed to traction on the thread, rendering it taut in the region of the valve, producing temporary incompetency. After the experiment was concluded and the thread withdrawn, another bismuth enema was injected, and the valve was again found to be competent.

3. In a certain number of cases, following the injection of a bismuth enema, the head of the bismuth column will pass the ileocecal valve and fill the terminal ileum for a varying distance. As already mentioned, I have found ileocolic valve incompetency in about one-sixth of my bismuth cases. This statement is based on the roentgenoscopic examination of more than 3,000 persons (June, 1914), most of them constipated, and all suffering from gastro-intestinal disturbances. Dietlen,[17] in 100 cases, found 22 in which the bismuth clysma showed ileocecal valve incompetency, 1 to 5. Holzknecht and Singer[14] found 3 cases of valve incompetency out of 15 cases examined, or 1 in 5. On the other hand, Dietlen observed insufficiency of the valve in only one of the normal cases which he examined during a period of several years. This agrees with my experience in examination of a number of presumably normal persons.

The method of testing the competency of the valve is the following: The patient should lie supine on the horizontal fluoroscopic table. It is not necessary to introduce the rectal point, or colon tube, more than 1 or 2 inches. The container should be placed not higher than two feet above the patient and the barium or bismuth enema allowed to flow by gravity, the course of the bismuth column being watched fluoroscopically. Ordinarily 1,200 c.c. of the barium enema at 100 F. will suffice to fill the colon. It is important that a uniform technic be followed. I insist on seeing, by means of the fluoroscope, that the cecum is well filled. Massage of the abdomen over the shadow of the cecum is practiced in the antiperistaltic direction. Still further to insure complete filling of the cecum, the patient is sometimes asked to lie on the right side for ten or fifteen minutes after the injection of bismuth, and a second examination is made when the patient returns to the table after evacuating the colon. The roentgenograms are made with the patient lying prone, plate anterior, rather than lying supine, plate anterior. In the latter position "saddling" of the ileum over the iliopectineal line may lead to confusion. In marked cases of ileocolic valve insufficiency, however, there is never any difficulty in recognizing the terminal ileum.

4. When the valve is once found incompetent it has been possible to demonstrate incompetency during succeeding tests. I have tested the valve a second time in more than fifty cases and on numerous occasions, a third time. The incompetency is seen to be a constant phenomenon in all cases in which it is once seen.

5. In preparation for the enema test, thorough preliminary cleansing bowel-flushings are ordered two hours before the bismuth test. Every once in a while, a patient complains bitterly that the cleansing enemas make her ill. Patients find difficulty in describing their feelings accurately; it seems to be a peculiar, sickening sensation accompanied by abdominal distress and nausea. Almost invariably it is found in these cases that the bismuth enema ascends

13. Hertz, Max: Wien. med. Wchnschr., 1897, Nos. 36 and 37.
14. Holzknecht and Singer: München. med. Wchnschr., 1911, No. 48.
15. Groedel: Verhandl. d. deutsch. Roentgen Gesellsch., 1912, viii, 56.
16. Groedel: Fortsch. a. d. Geb. d. Roentgenstr., 1913, xx, No. 2.
17. Dietlen: Fortschr. a. d. Geb. d. Roentgenstr., 1913, xxi, 23.
18. Kellogg: Med. Rec., June 21, 1913.
19. Schwarz: Die klinische Roentgendiagnostik des Dickdarmes, Berlin, 1914.
20. Katsch: Fortsch. a. d. Geb. d. Roentgenstr., 1913, xxi, 177.
21. Case, James T.: Proc. Am. Roentgen-Ray Soc., 1914; New York Academy of Medicine, Jan. 15, 1914.

a considerable distance into the terminal ileum, which seems to be wider than usual.

6. A still more convincing evidence of ileocecal valve incompetency, at least to me, is the reflux of ingested bismuth from the colon into the ileum. I have observed this reflux of ingested bismuth in more than seventy cases. For example, the terminal ileum is seen to be empty at the tenth or twelfth hour following the bismuth meal but at the twenty-sixth hour the terminal ileum is again filled with bismuth though no bismuth has been taken in the interim. Roentgenoscopic examination for this purpose must be conducted with the patient horizontal, so that accurate visualized palpation may be practiced under the fluorescent screen. Often, by massage in the antiperistaltic direction, bismuth ingesta may be forced back into the ileum from the cecum. Such cases invariably show extreme incompetency to the enema.

7. The literature concerning rectal alimentation contains the statement that if the nutriment be given in saline solution it will be more likely to pass the ileocecal valve. In order to test the possible influence of saline solution in testing the ileocecal valve by means of the bismuth enema in a series of fifty colon injections, I added enough salt to the clysma to equal normal saline solution. Comparing this series of cases with the fifty preceding and the fifty succeeding cases in which colon injections were made without salt, there was no difference in the frequency of ileocolic valve incompetencies. Several experiments were made in testing the influence of the composition of the enema. It was found that when barium sulphate, bismuth oxychlorid or bismuth subcarbonate was used in a gummy suspension in water, with or without saline solution, and in buttermilk suspension with or without the addition of salt, a constant proportion of cases, about 1 in 6, of ileocecal valve incompetency, was observed.

It seems to be a current opinion that rectal alimentation is, on the whole, unsatisfactory, although there are enough cases reported of successful rectal alimentation to warrant the continuance of the practice. In the light of our present knowledge concerning ileocecal valve incompetency, it seems to me reasonable to presume that those cases in which rectal alimentation has proved successful are instances of ileocecal valve incompetency.

8. To me one of the strongest evidences in favor of the normal competency of the ileocolic valve is the fact that when it is incompetent, the competency may be restored by a simple surgical procedure. Kellogg, agreeing with me that the ileocolic valve incompetency must be an important factor in the production of ileac stasis, devised a simple but successful operation for restoring the competency of the ileocolic valve. I have already reported postoperative studies on more than one hundred cases in which this operation for restoration of the ileocolic valve competency has been performed. With only three or four exceptions, the Roentgen-ray diagnosis of ileocolic valve incompetency was confirmed at operation, and the valve competency was restored by the simple operation above mentioned. That the competency was restored was proved, not only by testing the valve *in situ* before the abdomen was closed, but later by roentgenologic tests. Although, in several instances, more than a year and a half had elapsed since the operation was performed, in only three or four cases out of the hundred did subsequent roentgenoscopy find the valve incompetent.

The effect of the operation on the emptying-time of the ileum has also been tested by the bismuth meal, but thus far no evidence has been secured which would lead me to believe that the operation has caused the slightest interference with the passage of ingested food from the ileum into the colon. On the contrary, the emptying-time of the ileum, which before the operation was in every single instance prolonged, has been definitely shortened, nearly always within eight hours. Emphasis should be laid on the fact that the operation for repair of the incompetent valve has been done, in by far the majority of cases referred to, in connection with some other operation which required opening of the abdominal cavity.

In a few instances in which the ileocolic valve had appeared to be competent to the enema, at subsequent operation the competency of the valve appeared to be open to question, at least in relation to gas, since slight pressure on the cecum was found sufficient to cause a reflux into the ileum after the latter had been thoroughly emptied. In accounting for these cases, I have borne in mind the experimental evidence submitted by Ziemssen, who found that, under deep chloroform anesthesia, the resistance of the valve to reflux from the colon was decreased and fluid could be forced into the small intestine. I have, therefore, assumed that, in these cases, the valve itself was really incompetent, even at the time of the enema; but with the patient awake and the bowel tone normal, the activity of the sphincteric mechanism was sufficient to prevent a reflux from the cecum into the small intestine, even though the valve lips did not closely approximate. Further, at operation, the test of the valve competency is usually made with gas and not fluid. The experiments of Senn and others would indicate that one can overcome the competency of the ileocolic valve more easily with air than with fluid, especially when the patient is anesthetized.

9. Another significant observation is made in connection with surgical operation in cases in which ileocolic valve incompetency has been demonstrated roentgenologically. At operation the surgeon often finds the small bowel filled with gas to a very disturbing degree in spite of the careful preoperative preparation, whereas in cases in which the valve is competent the small intestine is collapsed.

10. Still another evidence of normal valve competency is found in the fact that it is possible in the operation of ileosigmoidostomy to construct an artificial ileocolic valve which will stand the test of postoperative roentgenologic studies. The operation does not differ from the ordinary end-to-side anastomosis except that there is a distance of 2 or 3 cm. measured along the surface of the ileum, between the inner and the outer suture-lines. The result is an inversion of the ileum into the colon for about half an inch, forming a circular valve-like fold, which acts as an efficient valve. I have made such postoperative studies in twelve patients thus operated on by Kellogg in which roentgenoscopic tests have proved the competency of the artificial ileocolic valve.

11. At operation, cases of ileocecal valve incompetency show definite deviations from the normal anatomic structure. The crease marking the normal invagination is obliterated; the ileum is pulled out of its cecal pocket; the last inch or two is dilated into a trumpet-shaped sac, which Kellogg has found at

operation to have a diameter of from 5 to 7 cm. instead of the normal 3 cm. Kellogg has also called attention to a thinning of the walls of the terminal ileum often seen in marked cases of stasis.

12. Post-mortem studies show a great predominance of competent valves. Surely the only function persisting in the cadaver is a mechanical action, yet Kraus in one hundred and fifty necropsies after death from various causes, found the ileocolic valve competent in all but twelve. The reports of a few other pathologists who have published their observations, agree closely with this statement.

In the foregoing pages evidence is cited which, it seems to me, demonstrates the fact that the ileocecal valve is normally competent and that the competency is due to an action of the valve lips which is largely, if not entirely, mechanical. This evidence may be summarized as follows:

1. The ileocecal valve is almost universally present in vertebrate animals; and, at least, in the dog, pig, and cat, the valve is competent to the enema, withstanding enormous distention of the colon by fluid and gas.

2. By means of a string passed through the alimentary canal traction may be made on the valve lips, producing temporary incompetency.

3. In about one-sixth of three thousand persons, most of them constipated and all suffering from gastro-intestinal disturbances, the bismuth enema passed the ileocecal valve and filled the terminal ileum for varying distances.

4. The valve incompetency thus determined is a constant phenomenon in those cases.

5. Patients with incompetency of the ileocecal valve describe characteristic disagreeable symptoms apparently due to passage of the enema into the small intestine.

6. In the marked cases there is also observed a reflux of ingested bismuth from the colon back into the ileum.

7. The occurrence of the incompetency is, to a large degree at least, independent of the temperature or composition of the opaque enema.

8. The incompetent ileocolic valve may be restored to competency by a simple surgical procedure, the competency persisting in some cases at least a year and a half.

9. In operation on patients with incompetent ileocolic valve the small bowel is found filled with gas to a very disturbing degree.

10. It is possible in the operation of ileosigmoidostomy to construct an efficient artificial ileocolic valve which will successfully act as a barrier against reflux from the colon.

11. Definite deviations from the normal anatomic structure are found at operation on cases of ileocecal valve incompetency.

12. Post-mortem studies show the ileocolic valve to be competent in the great majority of cases.

ABSTRACT OF DISCUSSION

DR. LEWIS GREGORY COLE, New York: In 1902 I first recognized a case of ileocecal insufficiency. Since then I have observed it in about the same proportion of cases that Dr. Case has reported. It occurs in varying degrees. In some cases it will only ascend about 6 inches, and in others will extend all the way through the intestines to the pyloric sphincter. Therefore, there can be no doubt that ileocecal insufficiency occurs frequently. The important question is whether or not it is pathologic. I have tried all kinds of arguments to interest surgeons and physicians in this subject, but the most effective is to ask whether or not they would expect symptoms if they were habitually fed the contents of their colon, even though it were administered through a stomach-tube. When the putrid feces from the colon pass into the small intestine, which is relatively sterile and composed of a highly absorbing membrane, one would certainly expect symptoms.

DR. WALTER B. CANNON, Boston: Dr. Case's work has interested me particularly because of earlier work which was done on lower animals. Attempts were made repeatedly in animals to press the material back into the small intestine from the colon, and in spite of repeated pressure it was impossible to cause this material to return to the small intestine once it had got through the ileocolic valve. Nevertheless, in a paper on some work done in 1901, it was shown that material injected into the colon might go back into the small intestine, and roentgenograms were taken at that time showing material, introduced into the large intestine through the rectum, that had gone back and filled a considerable part of the small intestine. The most significant part of the work which Dr. Case has reported was that in which he noted that material which had normally passed from the small intestine into the large, so that the small intestine was quite free, was found later back in the small intestine. This observation seems to offer strong opposition to the argument that material coming normally through the small intestine into the colon is different from that introduced per rectum and, therefore, is treated by the ileocolic valve differently from injected material. The mechanism of the return to the small intestine is, I think, a rather interesting one. In lower animals there is naturally a backward movement by the reversed peristalsis or anastalsis of the colon. Does Dr. Case know the mode of this return in human beings? Of course there are well-known instances of attempts by surgeons to keep material from escaping through an opening in the cecum, by uniting the small intestine with the distal colon. The material continued to escape, thus indicating there may be a reverse movement of material through the large intestine. It seems possible, therefore, that sufficient pressure might be developed in the large intestine to carry this material back through the many loops of the small intestine.

PROF. A. J. CARLSON, Chicago: There are severe symptoms that we would expect to follow the injection of fecal matter into the stomach. Cats' or dogs' feces diluted to pass through a stomach-tube, of which material 100 c.c. was given each day or every other day for two or three months, has produced no results whatsoever in any of our cats as evidenced in the general metabolism or general behavior of the animals. Does this mean that the same result would be obtained in man? It is possible that fecal material coming into the small intestine from the large intestine without passing the stomach is more toxic than if introduced by the stomach.

DR. ALLAN C. EUSTIS, New Orleans: It is generally accepted that feces or even their extract are highly toxic when introduced into the body. Some stools are more toxic than others, depending on flora and mediums, and the body has the power of breaking up these poisons and rendering them inert. The liver is especially active in this respect, but the heart-muscle, uterus and even subcutaneous tissues also possess this power. Dale has shown that if parahydroxyphenylethylamin is perfused through the liver of a dog, it is broken up and phenylacetic acid is formed. This amin, which is formed by the putrefaction of tyrosin, is capable of raising systolic blood-pressure from 110 to 260, when introduced into the vein of a dog, while a like action can be demonstrated in man. This protective power of the liver against intestinal poisons explains the apparent inconsistency in the anatomic and clinical findings in many cases of intestinal stasis. Patients with a very heavy indicanuria and evident intestinal stasis may present no subjective symptoms, owing to the fact that the intestinal poisons are detoxicated by the liver; on the other hand, some patients will have marked subjective symptoms with very little demonstrable abnormality of the gastro-

intestinal canal. It is the latter class of cases that are most readily handled along dietetic and hygienic lines, and to which I believe most of our cases of bronchial asthma belong. As I have shown in several communications, histidin on putrefaction yields a toxin which is capable of producing violent bronchial spasm, having been first discovered by Dale while seeking the active principle of ergot, and which he identified as beta-imidazolylethylamin. The lethal dose of this amin to a 300 gm. guinea-pig is 0.5 mg., intravenously. I have found that a 1 : 1000 solution of beta-imidazolylethylamin hydrochlorid, if macerated with the fresh liver of the turkey-buzzard (chosen because of its well-known resistance to putrid meat) and allowed to incubate at 37 degrees C. (98.6 F.) for four hours is non-toxic when introduced intravenously into a guinea-pig. Evidently, there is some ferment in the liver of the turkey-buzzard which is capable of splitting up this amin, for all precautions were taken for thorough asepsis, incubation was conducted under toluene, heat destroys the action and it does not take place in the cold. It may be assumed that the asthmatic individual has lost the power of detoxicating this particular amin, which is amply borne out by my clinical experience. Dr. Case has demonstrated that a patent ileocecal valve will cause intestinal stasis, and I do not think it was his intention to claim this anatomic variation as the cause in all cases, but I wish to impress the importance of considering the physiologic defences of the body to intestinal poisons before resorting to surgery to correct an anatomic abnormality.

DR. SEYMOUR BASCH, New York: Dr. Case in demonstrating his cases made a statement which I wish to controvert, namely, that this condition, unless remedied, is permanent. That is to say, in each patient in whom he finds incompetency of the ileocecal valve there is no spontaneous recovery. A patient was referred to me by a surgeon with a question of the necessity of an operation, because she had signs which pointed to some obstruction at the sigmoid flexure. In the course of our examination we gave the patient a colon enema and found she had a very long intestine low down in the pelvis, but no sign of any obstruction anywhere or ileocecal incompetency. This patient was placed on the usual anticonstipation coarse diet and treatment and massage was given the bowels and she has done very well. She has gained, in two years, over 20 pounds, her bowels are regular, and she feels well. In order to complete our study we gave her another colon enema two years later, and found that the muscles of her abdomen were competent to hold up the intestine. Just previous to that, however, I had heard Dr. Case at the County Medical Society in New York, and in going over the plates in my case I found that the second plate showed a marked incompetency of the ileocecal valve according to Dr. Case's outline. In the first plate no such thing appeared, but at the time of the second plate the patient was clinically very much better. We went over the case, but we found it impossible to understand just why a patient should show incompetency when clinically well and none at all during the height of her illness. It shows that we should not hurry our patients into an operation even if we find conditions that apparently point to surgical necesaity. We should try cor mon-sense measures first.

DR. E. C. ROSENOW, Chicago: Did any patients in whom Dr. Case noted incompetency of the ileocecal valve have arthritis deformans?

DR. GEORGE E. PFAHLER, Philadelphia: I have seen a number of cases in which arthritis deformans is associated with ileocecal valve incompetency.

DR. THOMAS A. GROOVER, Washington: Has Dr. Case any theories as to the cause of this condition? Is it congenital or acquired? Has he made any studies of infants to see if the condition is present in infancy? A large proportion of the cases which have presented this condition, in my experience, have been in those persons who have been in the habit of repeatedly taking large enemas with a great deal of pressure. Has he anything to say about this as a causative factor?

DR. J. T. CASE, Battle Creek, Mich.: The pathologic significance of ileac stasis due to ileocecal-valve incompetency I did not attempt to discuss at length here. I tried to confine my remarks to the one anatomic and physiologic question, whether or not the normal ileocecal valve was an efficient barrier against reflux from the ileum. The pathologic significance of ileal stasis is an intricate problem and many phases of it have been touched on. Without discussing whether or not indicanuria is a definite evidence of intestinal stasis, I may state that I have tabulated one hundred cases in which the ileocolic valve was found competent, and another hundred cases in which it was incompetent; one could see at a glance at the indicanuria values, which cases presented the condition under consideration. The patients with incompetent valve presented indicanuria in the majority of cases, whereas the patients in whom the valve was competent rarely showed a marked indicanuria. What I have tried to bring out is that the ileocecal valve can be rendered competent on the operating-table. An efficient competent valve can be made in ten minutes by the surgeon, and I consider that this fact tends to prove that the valve is normally competent. As Dr. Cannon has mentioned, one of the most convincing arguments as to the normal competency of the ileocecal valve is the fact that in a large number of cases I have observed a reflux of ingested food from the colon into the ileum. Antiperistalsis surely is an important factor in the production of stasis in the ileum, through incompetency of the valve. It is well known through Cannon's work that, in cases of obstruction in the distal colon, there is an exaggeration of the normal antiperistaltic influence in the proximal colon. This is exemplified in gangrene of the cecum recently seen in a case of malignant obstruction of the sigmoid colon. Exaggerated antiperistalsis is also seen very commonly associated with spasticity of the left half of the colon, especially the iliac and pelvic colon, with resulting functional hindrance to the onward peristalsis through that portion of the bowel. Most of our cases of ileocecal-valve incompetency have been associated with chronic colonic stasis with spasticity and adhesions of the iliac and pelvic colon—what the Germans have called "spastic obstipation." I was much interested in Dr. Basch's case, and should like to know the details which must have been followed out in order to make sure that the test of the valve competency was a thorough-going one. In all our cases we have insisted on a rigid routine, including careful cleansing of the colon by repeated enemas two or three hours before the barium-enema test; careful massage over the asending colon and cecum in the antiperistaltic direction during the injection of the enema; screen observations during the giving of the enema to make sure the cecum is well filled, and the employment of sufficient pressure to distend the cecum. I have never yet seen a case of incompetency in which the surgeons have not been able to demonstrate the incompetency at operation. I certainly agree most emphatically with what Dr. Basch has said about the importance of a thorough trial of non-surgical measures. Out of five hundred or more cases of incompetency of the ileocolic valve, only about one hundred have been operated on for repair of the valve, and many of these repairs were done in connection with other operations requiring abdominal section. There is a good field for further research in this matter in children's clinics. My observations on children have been limited to relatively few. As to the cases of arthritis, I can agree that I have seen a good many of them in which it seemed that the intestinal stasis was an important factor in the etiology.

Peril of Suggestion.—To make people feel better is not despicable. The danger lies in the fact that one is liable to be satisfied with making people feel well instead of making them be well. It should not be a great danger. We ought to be able to trust ourselves to diagnose scientifically and to treat rationally, even if we have an easy power of anesthesis. We do not give morphin in every case of pain; no more, then, would we dull every aching sensorium with suggestion. —*Med. Press and Circular.*

THE TREATMENT OF CHOLERA BY TRANSFUSION OF SALINE SOLUTION

WILLIAM W. CADBURY, M.D.
AND
J. ALLEN HOFMANN, M.D.
CANTON, CHINA

To the general physician practicing medicine in the United States, Asiatic cholera seems like one of those rare diseases only of academic interest. To one, however, who is practicing in an uncivilized and overcrowded city, this dread disease is a genuine reality.

Cholera had not appeared in Canton, except sporadically, for more than ten years; but in the summer of 1913 an epidemic of moderate extent and great severity spread over the city. The southern section was first affected and it was here that it first came under our notice among the patients of the John G. Kerr Hospital for the Insane. This institution is located on very low land, on the banks of a canal which runs through a large section of the city. This canal receives most of the drainage from the streets of this section of the city. On account of recent heavy rains the water of the river was higher than usual, and this of course affected the waters of the canal, causing them to flood the campus of the hospital during the high tide. To prevent the insane patients, who were at large within the compound, from drinking this water was impossible and thus the disease spread.

Specimens of the dejecta were sent to a Chinese bacteriologist who was trained in Hongkong and he demonstrated the presence of the specific spirillum of Asiatic cholera.

As indicated above, the disease was very virulent, many patients passing away but three or four hours after the onset of symptoms. Other patients lived for one or more days, dying of exhaustion or some later complication. The symptoms were quite typical, with an initial diarrhea becoming more profuse until the typical rice-water stools appeared. Prostration was extreme, passing into shock and death. In the more favorable cases there was reaction with return of body temperature and recovery or possibly death from renal complications.

The insane hospital being equipped only for the treatment of mental diseases, there were none of the ordinary facilities for the proper treatment of a disease such as cholera. The patients were isolated in a crude building known as a mat-shed. This building is made by erecting a framework of bamboo poles. The roof and sides are covered with the dried leaves of the fan palm. Rough and uneven thin boards are laid to make a floor. The shed was divided into two compartments by mats which were hung up in the middle. The men were placed on one side and the women on the other. There were no trained nurses of any kind, but only common workmen or coolies. It was therefore thought best not to put the patients on raised beds, but broad boards were laid on the floor and the patients were placed on these. It may be imagined how difficult was the attendance on patients thus placed on the floor. The liquid stools and the vomitus constantly being ejected by the patients ran off of the bedboards and so onto the floor where it escaped through the cracks between the boards to the ground below. The greatest number of patients under treatment in the mat-shed at any one time was fourteen, in all stages from that of beginning diarrhea to reaction or death. After reaction had occurred the patients were removed to another and more substantial building.

At the beginning of the epidemic, subcutaneous injections of saline solution were administered with little if any effect. Later, apparatus for giving intravenous transfusions was obtained, and this method of administering saline solution was employed in all but the very mildest cases. The materials used for the operation were unrefined raw salt, needle used for giving antitoxin injections, tin dipper, enamel-ware funnel, rubber tubing, brass tin holding over 2 pints (used for giving enemas ordinarily), native iron rice-pot, and 5-gallon kerosene tin.

The salt was dissolved in river-water or cistern-water, a solution of about 0.65 per cent. being employed. This was boiled on the Chinese wind lamp in the kerosene tin or the iron pot for not less than fifteen minutes. A rather heavy muddy precipitate formed during the boiling and continued to form while cooling. When ready for use this solution was again warmed or mixed with a hot solution to bring it to the proper temperature. It was then filtered by placing a plug of sterile cotton in the neck of the funnel.

On account of the lack of trained assistants and because of the fact that the patients were almost all demented, tossing about on the floor, there were many difficulties encountered while transfusing several pints of liquid into each patient. The filtered saline solution was placed in the brass can which was attached to an upright pole. The air was expelled from the attached rubber tube. Not far from the needle end this tube was interrupted by inserting a short piece of glass tubing. In this way the shorter rubber tube with cannula attached could be separately boiled for each patient.

There was no adequate means of boiling the instruments, which were simply dipped into a solution of camphor and phenol (carbolic acid). A strong solution of compound solution of cresol was kept at hand and the operators' hands were frequently dipped into this. The first transfusion was usually given in the veins of the left arm and subsequent injections were made into the veins of the right arm, foot or leg. By raising and lowering the tin the rate of flow could be regulated with considerable accuracy and the temperature of the water emerging from the cannula increased or lowered. The temperature was as a rule, however, altered by adding more cold or hot solution to that already in the tin. By using a long rubber tubing the temperature could be maintained at about 70 C. (158 F.) so that by the time it reached the vein it was at the proper temperature. It was noted that by pressure on the skin, immediately over the point of the cannula, one could readily feel the solution running into the vein, and this was of great assistance in determining the rate of flow.

The amount of solution administered to any one patient varied from 6 to 10 liters (quarts). During the transfusion the patients were as carefully watched as circumstances permitted. As a rule the injection was continued until the flow of water from mouth and rectum indicated the saturation of the circulatory system. By this time the pulse would be full, all muscular cramps would have ceased and the patient would express himself as feeling comparatively comfortable. Not infrequently before the transfusion was completed the patient was seized with a severe chill lasting from fifteen minutes to half an hour. Some patients

were filled with fluid even beyond their normal body-weight without any signs of discomfort or embarrassment to pulse or respiration. In spite of the crude methods of performing the operation, there was no evidence in any case of septicemia, and no symptoms arising from the entrance of air into the veins were observed, although the strictest precautions against this contingency were not always observed.

Except for the transfusion of saline solution there was practically no treatment given to the patients besides the administration of dilute sulphuric acid, after the period of shock had passed and vomiting had ceased. Then milk was cautiously given at first, followed later by congee and soups. Cases of uremia, the most fatal of the complications, were treated with diuretics. Some of the violently insane were covered with blankets and placed in a cage. They were placed on a brick pavement exposed to the direct rays of the sun. The head was carefully shaded with an umbrella or screen. The hot August sun of Canton proved to be quite sufficient to cause a profuse sweat.

The accompanying tables were prepared by Dr. Hofmann, showing the results of treatment of the insane patients at the John G. Kerr Refuge during the epidemic of 1913.

TABLE 1.—RESULTS OF TREATMENT OF INSANE PATIENTS

Hospital No.	Sex *	Age	No. of Transfusions	Mental Diagnosis	Result
2561	♂	42	1	General paresis	Recovery
2542	♂	25	1	Depression?	Recovery
1899	♂	24	1	Dementia praecox (hebephrenic)	Recovery
2572	♂	38	1	Dementia praecox (hebephrenic)	Recovery
619	♂	23	1	Epilepsy (imbecile)	Recovery
2036	♂	36	1	Dementia praecox (hebephrenic)	Recovery
2647	♂	30	1	Dementia praecox (hebephrenic)	Recovery
941	♂	38	2	Dementia praecox (hebephrenic)	Recovery
1699	♂	33	2	Dementia praecox (hebephrenic)	Recovery
2112	♂	43	3	Not diagnosed	Recovered (died later of dysentery)
2620	♀	18	1	Manic depressive (manic)	Recovery
2600	♀	26	1	Manic depressive (manic)	Recovery
1969	♀	40	1	Manic depressive (manic)	Recovery
2406	♀	28	1	Dementia praecox (hebephrenic)	Recovery
2327	♀	24	1	Manic depressive (manic)	Recovery
2381	♀	48	1	Manic depressive (manic)	Recovery
1842	♀	23	2	Manic depressive (manic)	Recovery
2373	♀	17	2	Dementia praecox	Recovery
1707	♀	60	3	Senility	Recovery
Servant	♀	40	2	Sane	Recovery
2670	♂	40	2	General paresis	Death
2635	♂	39	2	Exhaustive psychosis	Death
1499	♂	50	2	Dementia praecox (catatonic)	Death
1765	♂	45	2	Alcoholic insanity	Death
2652	♀	50	4	Melancholia	Death
2537	♀	25	2	Manic depressive insanity	Death
2499	♀	28	2	Manic depressive insanity	Death
2625	♂	30	0	Dementia praecox (hebephrenic)	Recovery
2611	♂	33	0	Epilepsy	Recovery
2134	♂	50	0	General paresis	Recovery
2652	♂	37	0	General paresis	Recovery
1437	♂	40	0	Dementia praecox (hebephrenic)	Recovery
2311	♀	20	0	Dementia praecox (hebephrenic)	Recovery
2123	♂	23	0	Dementia praecox (hebephrenic)	Death
1549	♂	46	0	General paresis	Death
1700	♂	12	0	Idiocy	Death
2616	♂	25	0	Dementia praecox (hebephrenic)	Death
2570	♂	45	0	Involuntary melancholia	Death
2129	♂	40	0	General paresis	Death
1610	♂	40	0	Dementia praecox (hebephrenic)	Death
2005	♂	40	0	Dementia praecox (hebephrenic)	Death
2018	♀	40	0	Manic depressive (manic)	Death
2046	♀	27	0	Dementia praecox (hebephrenic)	Death
1725	♀	50	0	Senility	Death

* In this column ♂ indicates male and ♀ female.

Of the men who were transfused and died, one was an alcoholic aged 45, one a dementia praecox patient aged 50. In both of these cases death was caused by collapse. A second transfusion was given but was too late, the delay being caused by a severe typhoon and the flooding of the compound. Another patient, aged 39, suffered from exhaustive psychosis, and was very weak. He died of exhaustion without symptoms of uremia, fever or collapse. Another patient, aged 40, was in the last stages of general paresis. He lived for ten days and had no signs of uremia, fever or collapse.

Of the women who died and were transfused, one, aged 40, had melancholia. She was transfused four times but died of uremia on the fifth day. One had manic depressive insanity of the manic type. She was aged 25, received two transfusions and died of uremia on the fifth day. A third patient, aged 28, had manic depressive insanity of the depressive type, and died of uremia on the fourth day in spite of two transfusions.

TABLE 2.—SUMMARY OF ALL CHOLERA CASES UNDER TREATMENT

	Recovered		Died		Total
	Male	Female	Male	Female	Cases
Transfused	10	10	4	3	27
Not transfused....	5	1	8	3	17
Grand totals.....	15	11	12	6	44

Thus of the twenty-seven patients who were transfused, 74 per cent. recovered and 26 per cent. died. Of the seventeen patients who were not transfused 35 per cent. recovered and 65 per cent. died. Some of these non-transfused cases were purposely not transfused because of the mild nature of the attack.

The epidemic of cholera was pretty general throughout Canton, and a number of cases were seen in various parts of the city. The treatment of these patients was more carefully carried out because of better facilities. The treatment recommended by Leonard Rogers of India was followed closely. A sphygmomanometer was found of great service, the Nicholson instrument being employed. If the blood-pressure fell below 70 mm. and the pulse became feeble, further infusions of saline solution were indicated. If in spite of treatment the pressure continued below 95 mm. and the action of the kidneys was scant, a fatal prognosis was justifiable.

CASE 1.—Mr. P. L. Y., teacher, aged 25. Symptoms of cholera developed on a Sunday night. At 2 a. m. severe diarrhea and vomiting had set in. Chinese remedies were administered until early Tuesday morning. At that time the patient was seen for the first time. Pulse at the wrist was not palpable. There were severe cramps in the muscles of the legs, and the patient was semiconscious with frequent evacuations from the bowels and mouth. About 3 pints of normal saline solution were administered in the left arm and a nurse was placed in charge of the patient. High enemas of normal saline solution were given every two to four hours. Potassium permanganate solution was given freely as a beverage (0.2 to 0.3 gm. to 500 c.c. of water). On Wednesday no urine was voided, but the vomiting ceased and the stools became of firmer consistency and of a greenish color (the effect of the large draughts of permanganate). Saline solution was again given in the vein of the leg. On Thursday a few drops of urine were voided. Saline solution was again given intravenously, but the blood-pressure failed to be maintained. Cups were applied to the loins but the patient gradually became uremic, another transfusion was without avail, and death occurred early Friday morning.

CASE 2.—Man, aged 28, brought to the Kung Ye Hospital five or six hours after the onset of diarrhea and vomiting. The pulse was very feeble but perceptible. Four pints of normal saline solution were injected intravenously. There ensued a very violent chill lasting over half an hour. The patient got up and walked out to his sedan-chair thinking

apparently that he was about to die. Permanganate solution was prescribed. The chill continued for some time after the patient had left the hospital. The next morning, seen at his home, the patient still had some diarrhea, there was no vomiting and the blood-pressure was over 100 mm. Rectal enemas were prescribed. The last visit was made four days later. Stools were normal and there was free excretion of urine and the patient had a fair appetite.

Case 3.—Man, aged 21, student at the Kung Ye Medical College. Patient had two loose stools following his midday meal. At 4 p. m. he vomited. He was first seen at 8 p. m. with persistent vomiting and but little prostration. Bismuth was given by mouth. At 12:30 a. m. the vomiting persisted and there was a diarrhea with rice-water stools. The pulse was very feeble but palpable. Normal saline solution, about 2 pints, was administered intravenously, until there was considerable oppression in the region of the heart. After half an hour there was a severe chill lasting for an hour. Permanganate solution was given. Patient remained in the hospital four or five days. Recovery was uneventful.

Case 4.—Mrs. K., aged 24, was taken ill at 4 p. m. with severe vomiting and diarrhea. She was brought to the Kung Ye Hospital the next day at 2 p. m.; the pulse was very weak. Saline solution was administered intravenously. She was not seen again but was reported to have recovered three days later.

A number of other patients were seen either in their homes or in the hospital. One was brought to the hospital *in extremis*. No treatment was given. Several patients were seen in their homes, cyanosed, extremities cold, pulse impalpable and paient semiconscious. All these died a few hours after they were seen.

Canton Christian College—John G. Kerr Hospital for the Insane.

DUODENAL ULCER *

EDGAR R. McGUIRE, M.D.
Adjunct Professor of Surgery, University of Buffalo, Medical Department
J. L. BUTSCH, M.D.
AND
J. EVANS, M.D.
BUFFALO

In an article on perforating duodenal ulcer, in which he advises gastro-enterostomy in all cases of perforation, Deaver[1] says in conclusion:

While gastro-enterostomy does not compare in importance with closure of the perforation in gastric or duodenal ulcers, it is nevertheless a factor of first magnitude in the immediate cure and ultimate result.

Ochsner, Mayo, Coffey, MacKenzie, Babcock and Sutton, who took part in the discussion, differ in certain particulars, but for the most part agree with Deaver's conclusion. This position was so contrary to our experience of about twenty cases, some of which have been reported,[2] that we determined on an experimental investigation of the subject.

At first thought an almost unsurmountable difficulty is presented, namely, to produce a chronic ulcer in the animal. On further consideration, however, if it be impossible to produce contraction in a normal duodenum no matter how much is excised, the production of an ulcer need not enter into the problem. In other words, if it be impossible to produce stricture of the duodenum without ulceration, then if the ulcer is excised, leaving nothing but normal tissue in closing the duodenum, the stricture is impossible. This work of course applies only to the acute perforations, not to the chronic ones with a large mass of indurated tissues around them.

The first work of this kind of which we have found any record is that done by Dr. Elliott of New York. In his work he used cats, and was unable to produce stricture regardless of the amount of tissue excised. In our work we used dogs, which were better, but not ideal, because of the thickness of the duodenum. A number of experiments were done, one of which is selected as illustrative.

Dog 6.—Weight, 18 pounds. Operation, Oct. 31, 1913. Dr. J. L. Butsch, assisted by Dr. John Evans. Under morphin and ether anesthesia the duodenum was exposed and a strip 3.5 by 1.5 cm. in size was removed, just beyond the pylorus. When closed only the finest probe could be passed through the lumen. The animal recovered, and was able to eat the usual food without difficulty. Three weeks later the abdomen was reopened, and while the duodenum was still contracted, it had increased to one-third its normal size. March 23, 1914 (142 days after the first operation) the abdomen was again opened and the specimen removed. The lumen of the duodenum was about two-thirds its normal size.

This experiment is fairly typical of all the others, although several complications were more or less frequent. A few dogs died from peritonitis. In nearly all, the omentum was more or less adherent to the duodenum. Many of the animals lost weight, although there was no vomiting in any of them.

As a result of this work, we began to suspect that it was impossible to produce a stricture of any tubular passage in the body, without ulceration. We tried it out in the ileum, and found that almost invariably obstruction took place from outside the lumen, because of the omentum becoming adherent.

Dog 22.—Weight, 25 pounds. Operation, Dec. 9, 1913. Dr. Butsch and Dr. Evans. Under ether anesthesia the duodenum was exposed, and 5 by 2 cm. was excised. Necropsy Dec. 25, 1913. Many adhesions were found between the intestine and omentum, and almost complete obstruction was present. The intestine was dilated proximal to the operative field. In other experiments we found it impossible to prevent this complication.

In all the dogs operated on, we were unable to produce permanent contraction of the duodenum. This we believe to be fairly conclusive evidence, that if one excises the ulcer, accurate closure of normal tissues cannot produce permanent obstruction. From this experimental work, we would offer the following suggestions.

1. It is impossible to produce obstruction in a dog, no matter how much of the wall is excised.
2. Probably it is impossible to produce obstruction to any tubular passage excepting by the contraction of scar tissue, or adhesions outside of the lumen.
3. Gastro-enterostomy is contra-indicated in acute perforating ulcers, when the ulcer can be readily excised, because if excision of all scar tissue is thoroughly done, a stricture cannot occur.
4. Clinically we have practiced excision of the ulcer in all cases of perforating duodenal ulcer, without gastro-enterostomy, and in no case has obstruction occurred.
5. While the lumen is not restored to its full size in dogs, the character of the human intestine is such that we believe complete restoration ultimately does ensue.

430 Delaware Avenue.

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* This work was done in the Experimental Laboratory of the University of Buffalo.

1. Deaver, John B.: Posterior Gastrojejunostomy in Acute Perforative Ulcer of the Stomach and Duodenum, The Journal A. M. A., July 12, 1913, p. 75.
2. McGuire, Edgar R.: Buffalo Med. Jour., June 2, 1912.

THE DUCK AS A PREVENTIVE AGAINST MALARIA AND YELLOW FEVER

SAMUEL G. DIXON, M.D., LL.D.
Commissioner of Health, Commonwealth of Pennsylvania
PHILADELPHIA

The duck is one of the greatest known enemies of the mosquito, and therefore of yellow fever and malaria. It has possibly one of the widest geographical ranges of any of the birds. It is even found in the Arctic and Antarctic regions; also in Australia, where bird life is so peculiar.

After trying the ability of fish to devour larvae and pupae of mosquitoes, with varied success, I built two dams near together on the same stream, so that each would have the same environment for the breeding of mosquitoes. Each covered nearly 1,400 square feet. In one, twenty mallard ducks, *Anas platyrhynchos,* were permitted to feed, while the other was entirely protected from water fowl, but well stocked with goldfish, *Carassius auratus,* variety *americanus.*

The one in which the ducks fed was for several months entirely free from mosquitoes, while the pond protected from ducks and stocked with fish was swarming with young insects in different cycles of life.

To the infested pond ten well-fed mallard ducks, *Anas platyrhynchos,* were then admitted, and as they entered the pond they were first attracted by the larval bactrachians, tadpoles. They, however, soon recognized the presence of larvae and pupae of the mosquito and immediately turned their attention to these, ravenously devouring them in preference to any other foodstuff present. At the end of twenty-four hours no pupae were to be found and in forty-eight hours only a few small larvae survived. The motion of the water, made by the ducks, of course drowned some of the insects—what proportion cannot be estimated.

For some years I have been using ducks to keep down mosquitoes in swamps that would have been very expensive to drain, but I never fully appreciated the high degree of efficiency of the duck as a destroyer of mosquito life until the foregoing test was made.

In the work of Howard, Dyar and Knab, entitled "Mosquitoes of North and Central America and the West Indies," will be found[1] an essay on the destruction of the mosquito and house-fly by Mr. William Beutenmueller, who expresses the opinion that aquatic birds could be used for the purpose of destroying mosquito larvae.

Mr. William Lockwood of Boston, an artist, who made a hobby of raising aquatic fowl, also expresses an opinion that the spoonbilled duck is particularly adapted to the destruction of mosquito larvae resting on the surface of the water.

Mr. McAtee of the Biological Survey found mosquitoes in the gizzard of the mallard duck. While other birds, fish, spiders, bactrachians, arthropods and reptiles are all enemies of the mosquito, none of them have the wide geographical range and the capacity of devouring large numbers of the larvae and pupae on land and water as the duck.

Ducks can be used in ponds, swamps, both open and in jungles, and can be driven from place to place. Not only can they be generally used to keep down mosquito life but they also furnish a delicious and valuable foodstuff.

1. Howard, L. O.; Dyar, H. G., and Knab, Frederick: Mosquitoes of North and Central America and the West Indies, Washington, Carnegie Institution, 1913, i, 178.

THE SUCCESSFUL ISOLATION OF ERGOTININ CRYSTALS FROM CERTAIN ORGANS IN A CASE OF ACUTE ERGOT POISONING *

JACOB ROSENBLOOM, M.D., PH.D., AND CHARLES B. SCHILDECKER, M.D.
PITTSBURGH

We report the first successful isolation of an alkaloid of ergot from the organs in a case of acute ergotism. Hitherto the toxicologist had to rely on the physical properties of this fungus for its identification. Therefore, in those cases in which pharmaceutical preparations of the fungus have been used, it has been impossible to identify the drug. Dragendorff,[1] for example, found it impossible to identify ergot by the isolation of any of its constituents from animal tissues. Blythe[2] says that "there has been no experience in the separation of the constituents of ergot from the organs of the body, [but] an attempt might be made by Dragendorff's process, but success is doubtful." Mann[3] states that "it is practically impossible to separate ergot from the tissues so as to identify it." We, however, have been successful in isolating "ergotinin" by the use of Dragendorff's process.

Thanks to George Barger and his collaborators, our knowledge of the alkaloids of ergot is rapidly becoming complete.[4]

We were recently called to perform a necropsy in a case of sudden death under suspicious circumstances. Through the kindness of the attending physicians, Drs. J. H. Love and J. C. Edgar, we are able to give the following history of the case:

Dr. Love was called on the twelfth of the month to attend a young girl who suddenly became ill, about one hour after supper. He found her cyanotic, with rapid pulse, and she had vomited about two quarts of material looking like food remnants. After stimulation the patient recovered and he thought she had suffered from an acute gastritis.[5] Eleven days later, about the same time in the evening, he was called to attend the same girl, and found her in a serious condition. She was unconscious, had no control of the bowels, and the urine was suppressed. Clonic convulsions occurred and on palpation of the abdomen he could feel the uterus contracting. This contraction was also noted visually. The stools were bloody and contained pieces of the mucous membrane of the intestine. Nine hours before death the temperature rose to 103 F., and nineteen hours after he was first called the patient died without regaining consciousness.

On necrospsy a pregnancy was found and the whole gastroenteric tract was the seat of an intense inflammation. The mucous membrane of the small and large intestines was covered with a layer of blood, and the membrane was full of punctate hemorrhages. The kidneys, stomach, small and

* From the Biochemical Laboratory of the Western Pennsylvania Hospital.

1. Dragendorff: Ermittelung von Giften, Göttingen, 1895, p. 294.
2. Blythe: Poisons, Their Effects and Detection, London, 1906, p. 465.
3. Mann: Forensic Medicine and Toxicology, Philadelphia, 1893, p. 599.
4. For Description and History of the Alkaloids of Ergot see the following:
   Henry: The Alkaloids, Philadelphia, 1913, p. 383.
   Barger, in Allen's Commercial Organic Analysis, Philadelphia, 1913, vii, 16.
   Barger and Dale: Biochem. Jour., 1907, ii, 240.
   Active Principles of Ergot, editorial, THE JOURNAL A. M. A., June 20, 1914, p. 1969.
5. For reports of cases of acute ergot poisoning see:
   Davidson: Lancet, London, 1882, ii, 526.
   Oldright: Canadian Med. Jour., 1870, vi, 404.
   Meadows: Med. Times and Gaz., 1879, ii, 397.
   Hulme: Med. News, 1877, li, 538.
   Debierre: Bull. de therap., cvi, 52.

large intestines, and liver were taken for toxicologic examination.

Portions of these organs were examined for poison by Dragendorff's process as described by Witthaus.[6] It was found that the residue left by chloroform from an acid solution of the extract of these organs (Residue 3) was of a crystalline nature. The residue obtained by the extraction of the acid aqueous liquid with ether (Residue 4) was also crystalline.[7] These crystals[8] of both the residues were of the shape of long needles, the sides of which were not quite parallel and the ends replaced by a pair of faces. These crystals were readily soluble in chloroform, dissolved in acetone, and were sparingly soluble in ether and also in alcohol. A precipitate was obtained with Mayer's reagent and with iodin solution. When dissolved in ether and a few drops of sulphuric acid was added a transient orange color formed, changing to blue. A solution in sulphuric acid on addition of dry ferric chlorid gave an orange tint changing to crimson, green and blue. When placed in a bath previously heated to 210, they melted at 231.

Prof. George Barger of England was kind enough to send us preparations of ergotinin prepared by himself. On comparing these crystals with those which we obtained from certain organs in this case of acute ergot poisoning, we have found them to agree in all particulars.

5737 Forbes Street—Park Building.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

DOSAGE FORMS OF ACCEPTED ARTICLES.—The following dosage forms of accepted articles have been accepted for inclusion with New and Nonofficial Remedies:

Hypodermic Tablets of Emetine Hydrochloride, Mulford.—Each tablet contains emetine hydrochloride, 0.016 Gm. Prepared by H. K. Mulford Co., Philadelphia.

ACNE VACCINE.—(See N. N. R., 1914, p. 246).

E. R. Squibb and Sons, New York.

Acne Vaccine.—Marketed in boxes of 4 syringes containing 25, 50, 100 and 200 million killed bacilli. Also in boxes of 2 syringes containing 50 and 200 million killed bacilli; boxes of 6 ampoules containing 10, 25, 50, 100, 200 and 500 million killed bacilli, with a syringe; and boxes of 2 ampoules containing 50 and 200 million killed bacilli, with a syringe.

BACILLUS COLI VACCINE.—(See N. N. R., 1914, p. 247).

E. R. Squibb and Sons, New York.

Bacillus Coli Communis Vaccine.—Marketed in boxes of 4 syringes containing 100, 200, 500 and 1,000 million killed bacilli. Also boxes of 2 syringes containing 100 and 500 million killed bacilli and boxes of 2 ampoules containing 100 and 500 million killed bacilli, with a syringe.

6. Witthaus and Becker: Medical Jurisprudence, Forensic Medicine and Toxicology, New York, 1911, iv, 157.

7. In his description of Dragendorff's process, Witthaus mentions that ergotinin may appear in traces in Residue 3, and that the larger portion would be found in Residue 4.

8. The crystals in Residue 3 were tinged with a yellow color, while those in Residue 4 were colorless.

BACILLUS OF BORDET-GENGOU VACCINE.—(See N. N. R., 1914, p. 247).

E. R. Squibb and Sons, New York.

Bacillus Pertussis Vaccine.—Marketed in boxes of 4 syringes containing 25, 50, 100 and 200 million killed bacilli. Also boxes of 2 syringes containing 50 and 200 million killed bacilli; boxes of 6 ampoules containing 25, 50, 100, 200, 300 and 500 million killed bacilli, with a syringe; and boxes of 2 ampoules containing 50 and 200 million killed bacilli, with a syringe.

BACILLUS PYOCYANEUS VACCINE.—(See N. N. R., 1914, p. 249).

E. R. Squibb and Sons, New York.

Pyocyaneus Vaccine.—Marketed in boxes of 4 syringes containing 100, 200, 500 and 1,000 million killed bacilli. Also in boxes of 2 syringes containing 100 and 500 million killed bacilli.

GONOCOCCUS VACCINE.—(See N. N. R., 1914, p. 250).

E. R. Squibb and Sons, New York.

Gonococcus Vaccine.—Marketed in boxes of 4 syringes containing 100, 200, 350 and 500 million killed gonococci. Also in boxes of 2 syringes containing 100 and 500 million killed gonococci; boxes of 6 ampoules containing 50, 100, 150, 350, 500 and 1,000 million killed gonococci, with a syringe; and boxes of 2 ampoules containing 100 and 500 million killed gonococci, with a syringe.

Therapeutics

PREVENTION IS GREATER THAN CURE

(*Continued from page 1113*)

II

HEAT AND INFANTS

The death-rate from diarrheal diseases is twice as great in summer as in winter. Short-lived high temperature may cause some heat deaths of infants, but does not much affect the death-rate from gastro-intestinal disturbances, unless it should cause an unfavorable turn during an acute attack of the trouble. On the other hand, continued excessive heat does cause an increase in the death-rate from diarrheal diseases in infants, although the heat alone is not the only factor. Germs that cause intestinal disturbances seem to grow better in hot weather, although hot weather, if causing an increased temperature in the child, seems to lower the tolerance to starchy foods.[1]

Hence the prevention of these disturbances and the saving of life will be caused by shady verandas, roof-gardens, trees, parks, seashore resorts and cool evening country air.

Previous knowledge has recently been confirmed[2] that more than one-half of the deaths of children under 1 year of age are due to disorders of nutrition, and about 75 per cent. of these deaths occur during the first three months of life. These statistical facts, together with the disturbances caused by the heat of summer, emphasize the advisability, if not the necessity, of a mother nursing her baby during the first year of its life, as the mother's milk is ordinarily the safest food that the child can receive.

INFANT AND SCHOOL HYGIENE

Success in the work which this heading represents has been shown by the splendid reduction of deaths in young children in cities properly utilizing the knowledge of medical science and sanitation which we now possess. In some cities there has been a diminution of more than two-thirds of the deaths from contagious

1. Zahorsky, J.: Am. Jour. Dis. Child., November, 1913, p. 318.
2. Supplement 16, U. S. Pub. Health Rep., June 19, 1914.

diseases and of more than one-third of the deaths from diarrheal and respiratory diseases of young children.

The foundation of these splendid results, which should be studied and inaugurated in all communities, are: measures for the purification and proper refrigeration of milk; instruction in the proper preparation of milk as a food for infants; the house visits of trained nurses; the babies' aid, and mothers' aid societies; school inspection; school hygiene (good light, aided by the proper color tints of walls and ceilings, proper desks and chairs, rest and exercise periods); play-grounds; open-air schools; segregation of defective from normal children, etc.

It is not the purpose in these articles to discuss in detail these great problems, but only to suggest that those interested, and those who should be interested on account of their official positions, should read and study the statistics already published. It is desired to urge the necessity of careful, skilled school inspection and to urge on school boards that proper light saves eyes; that proper desks and chairs prevent scoliosis and other deformities; that good ventilation prevents respiratory troubles; that clean books, pencils, desks and chairs prevent eye, nose and throat inflammations, to say nothing of the contagious diseases; that proper rest periods save the child's brain from tire; that good, well-paid teachers promote education with a minimum amount of brain fatigue in the child and cause the child to cooperate with, and not combat, the instruction offered. Also, means must be inaugurated to feed underfed children.

The necessity of school inspection is readily shown by quoting Allport's[3] figures, viz.:

> There are in the public schools in this country 20 million children, and 75 per cent. of these are suffering from some defect that can be cured, or at least ameliorated; 500,000 of these children have heart lesions; 1,000,000 have spinal curvature or other defect; 1,000,000 have tuberculosis; 1,000,000 have defective hearing; 5,000,000, or 25 per cent., have defective vision; 5,000,000, or 25 per cent., are underfed or wrongly fed; 6,000,000, about 30 per cent., need operations on the tonsils or adenoids, and 10,000,000, or 50 per cent., have defective teeth.

Skilled school inspection probably reduces the deaths from contagious disease by 50 per cent., and perhaps the total number of contagious-disease cases by 75 or 80 per cent. Also, the improved hygiene of schools and the improvement in health caused by the correction of defects discovered by medical inspection must greatly reduce the instances of contagious disease.

The value of regulated and supervised calisthenic exercises for schoolchildren is great. These should teach correct standing, correct walking, correct breathing and such muscle exercises as will develop all parts of the body symmetrically. Dancing under a skilled teacher is valuable exercise, if not too long continued, or if it does not add one more preventive of the child's enjoying good out-door play and walks.

The dance craze of this age is deplorable. The harm done sexually, neurotically and physically to youth and young adults is terrible to contemplate. The harm done to old men and women is ridiculously unnecessary.

Skilled, corrective muscle exercises to remedy defects in deformed children are necessary to prevent the deformity becoming permanent, and it is a crime to neglect such treatment.

More detailed suggestions for school inspection will be presented later.

3. Allport: Arch. Pediat., June, 1913.

AIR

There has been a good deal of misunderstanding as to what constitutes impure air. There is always in the ordinary respired air of buildings and houses too little carbonic acid gas to do any harm to an individual. Also, a varying content of oxygen, within ordinary limits, is not an important factor in the effect of the air on human beings. It is only heat and extra moisture in confined, respired air that is depressing. Also, stagnant air is more depressing than air in motion, even when it is of the same constituency. Of course, dust-laden air is always injurious. In artificial ventilation in hospitals, schoolrooms and auditoriums screening from outside dust and vacuum-cleaning from inside dust are essential; in fact, stagnant dust is bad and moving dust is worse.

Too great heat is often maintained in winter in schoolrooms and hospital wards, especially in those for children. Also a great variation of day and night temperature in hospital wards is not advisable. While dry air is not necessarily unhealthful, as noted in high altitudes, deserts, plains, etc., still a normally regulated moisture should pervade hospital wards and operating-rooms, which latter are generally too dry, unless steam sterilizers are in use. Schoolrooms not overheated will probably be normally moist from outside air.

One great disadvantage of stagnant, overheated, overmoist air seems to be its effect on the skin. The skin cannot normally breathe, so to speak; moisture remains on its surface, the skin glands cease to properly act, and the surface circulation and heat elimination are interfered with and the person feels depressed, metabolism is impaired, the appetite fails and loss of nutrition occurs. Everyone realizes the refreshment felt when a window is suddenly opened in a stagnant room. Hence the danger to health in a school, factory or store where the air is stagnant, dusty, overmoist or overheated.

The value of the open-air treatment of many diseases has been incontrovertibly demonstrated. Overheated rooms are bad for the sick, and especially bad for sick babies. An infant may have his body temperature raised by a continued sojourn in an overheated room or by being long subjected to summer heat, at 85 F. or over.

BAD HABITS OF CHILDHOOD

It is only necessary here to name some of the habits that are subversive of the future good health of the child. The physician should be alert to these causes of poor health and nervousness in children, and if he is,. proper preventive or corrective treatment will be inaugurated. These bad habits that should be watched for are masturbation, thumb- and finger-sucking or sucking the pacifier (said by some eminent pediatrists to promote the development of adenoids), nail biting, imitation movements or habit-spasms and dirt-eating or other objectionable eating habits.

The various local causes of masturbation and of bed-wetting must not be forgotten. The eradication of such causes sometimes cures the condition like magic.

(To be continued)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street . . . Chicago, Ill.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

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SATURDAY, OCTOBER 3, 1914

MUSCULAR WORK AND EFFICIENCY

The mechanical efficiency of the human organism as a muscular machine and the conditions which modify or control it are topics that appeal to different persons from different points of view. The employer of labor, the athlete, the physiologist and the physician are interested in the human body, each in relation to that aspect of muscular performance which concerns his own immediate requirements. In one group of cases it is the desire to promote the working capacity of man by suitable diet in which economic considerations may or may not play a part. Scientific management in business has to-day begun to encompass even such once derided details as the feeding of the employed and the careful regulation of the hygienic aspects of their work. Other groups are interested in the maximum possibilities of the human mechanism and in such questions as the relation of training and whatever this implies to the capacity for muscular performance. In the medical world it is usually the restoration of a depleted function that demands attention. In all of the instances cited it becomes desirable, if not actually necessary, to start from some standard — to refer to some norm whereby the deviation from the usual course of physiologic behavior may be estimated.

The Boston Nutrition Laboratory of the Carnegie Institution of Washington has brought together in considerable detail the important observations already ascertained by careful investigation of the subject of muscular work, many of them determined or verified anew by the researches conducted in this scientific establishment.[1] Much of interest in the subject is not new; but when we recall the wide divergence of opinion still existing with regard to the underlying principles of muscular work, the deficiency in our knowledge of the relation of diet and training to it and the widely differing assertions as to the best practices to be followed, it may not be amiss to review briefly some of the admitted fundamental facts which may be regarded as definitely established.

1. Benedict, F. G., and Cathcart, E. P.: Muscular Work: A Metabolic Study with Special Reference to the Efficiency of the Human Body as a Machine, Carnegie Institution of Washington, Pub. No. 187, 1913, p. 176.

When muscular work is performed by the human body, the consumption of fuel either from food or from body material is greatly increased. The character of the supply available for this purpose may vary somewhat with the existing conditions. The amount of protein present is ample to provide for all drains on nitrogenous material during rest or short periods of work. Similarly, in a well-nourished man there is a practically unlimited supply of fat. It is the supply of carbohydrate which is comparatively restricted and liable to be somewhat easily depleted. For some years we have been taught that, contrary to the older beliefs, the character of protein metabolism is unchanged by muscular activity. It has become evident that under ordinary circumstances the power to accomplish muscular work is not derived from destruction of protein, but from the combustion of the non-nitrogenous nutrients. There seems to be little difference in the efficiency of the body as a machine, whether fats or carbohydrates are used as fuel. Inasmuch as the storage of carbohydrate is apparently depleted easily by excessive work, it appears as if this type of foodstuff were used in preference to any other by the contractile tissues.

Reasoning that the ideal conditions for a study of the question as to whether or not there is a selective combustion of carbohydrate material during severe muscular work would obtain after the subject had abstained from food for twelve to fifteen hours, that is, when there was a relatively large supply of body-protein, and a relatively small supply of body-glycogen, Benedict and Cathcart have reinvestigated it from this point of view. If, under these conditions, a selective combustion took place, the supply of body-glycogen would be rapidly depleted and this would be indicated by the respiratory quotient. Although the evidence in all of the experiments cited is strikingly in favor of the view that during periods of muscular work there is an increased draft on carbohydrate material in the body, the data by no means indicate that the muscular work is performed exclusively by the combustion of carbohydrate.

The foregoing has raised the inquiry as to the probable amount of carbohydrate stored in the human body. The calculations made from fragmentary analyses of tissues, as well as indirect evidence secured from the new experiments on muscular work, suggest not far from 400 gm. (less than a pound) as a normal figure. This is by no means enough to perform a vigorous muscular task such as was undertaken by one of the subjects of the Nutrition Laboratory, who accomplished, on a stationary bicycle, work equivalent to a "century run" of 100 miles before breakfast, a remarkable evidence of staying-power in man. In this connection we may note some of the newer data on the mechanical efficiency of man, that is, the relationship between the energy consumption and the output

of work. The highest value observed, in the case of the bicycle-rider referred to above, was 41 per cent., an exceptionally high figure. The average efficiency for a large number of experiments was 30 per cent. It does not vary greatly with different subjects. These data considered in conjunction with the usual muscular accomplishment there reported give substantial evidence of the superior functioning of the human mechanism.

Another observation, on the bearing of which we have commented in the past,[2] was that the pulse-rate even during severe muscular work, very closely follows the amount of the energy output — an observation that is fully in accord with the values secured with normal resting subjects which show that the pulse-rate and the total metabolism are intimately related. Although with the cessation of work the pulse falls rapidly, there is a distinct tendency for the rate to stop at a much higher level than before the work is undertaken. The long-continued rapidity of respiration and heart-beat after exercise, as, for instance, after running, is familiar evidence that the intense metabolism incidental to active muscular work does not instantly disappear with the cessation of the work. This after-effect of muscular work indicating the persistence of a distinctly higher metabolism for some time must be taken cognizance of in the future consideration of the physiology of exercise.

COOPERATION IN PUBLIC HEALTH ADMINISTRATION IN THE SMALL COMMUNITY

The limitations and inefficiency of the health office of the small community are recognized by public health workers and this probably constitutes one of the greatest single obstacles to the general advancement of the public health movement. The strategic importance of the local health office in the warfare on disease must be obvious. With an inefficient administration at this point the citizens are at all times exposed to the danger of attack and are deprived of that protection which modern sanitary science is enabled to throw about them. So far as rural health conditions in many sections of our country are concerned, the scientific work of the last quarter of a century might as well have never been done. This condition is fundamentally due to two facts: First, the science of public health is a complex of specialties, to be mastered, even in principle, only by an expert with years of training and to be efficiently administered, in its various branches, only by a group of trained workers under such expert supervision; second, a small community cannot financially afford the services of such a staff. The situation has one redeeming feature: the small town which cannot afford a trained staff requires but little of the time of each of its members, so that cooperation among towns is plainly indicated. The minimum group for a complete and efficient health office is necessarily a complete, though diminutive, city office and cannot be farther subdivided. If this group be too large for the needs and financial resources of the small unit of population, there remains the necessity of broadening the territory.

With a view to the overcoming of these deficiencies in the health work of small communities, and in an endeavor to find a practical solution of the difficulties, an experiment in cooperative public health administration was undertaken under the auspices of the Department of Biology of the Massachusetts Institute of Technology. This important work was under the immediate supervision of Prof. Earle B. Phelps of the Hygienic Laboratory, U. S. Public Health Service, but at that time on the faculty of the institute. The report of the work has just appeared as a publication of the Public Health Service,[1] and for those interested in the improvement of the health affairs of small urban and rural communities will be a most illuminating document. A staff, comprising an administrative officer, a secretary and bacteriologist, a plumbing and sanitary inspector and an assistant inspector with the necessary clerks, and with special assistants for certain special work, was first organized. The services of the staff were offered to several communities, which were invited to enter into a contract with the organization for one year. The towns of Wellesley, Belmont, Framingham, Needham, Weston, Canton and Winchester, and the city of Melrose accepted this proposition, the three last named for milk inspection only. Headquarters were established in Wellesley with a fully equipped office and laboratory, while the telephone and an automobile and motorcycle provided rapid communication between the various centers of activity.

Especial attention was given to the milk supply and to the rapid handling of laboratory diagnostic work. Small portable incubators were located at the various centers, so that diphtheria cultures deposited any time before midnight were in a condition to be examined and reported on early the next day. Particular emphasis was laid on the importance of studying each case of contagious disease as to its origin and, especially in the diphtheria work, this policy led to results of immediate and demonstrable value.

In the milk work reliance was placed wholly on a campaign of publicity, coupled with a helpful attitude toward the milk men who desired the assistance of the office in the improvement of their supplies. Monthly reports, chemical and bacteriologic, were published in the daily press. Fly and mosquito exterminating campaigns were organized in several of the towns. Special attention was given to the sanitary inspection of markets and shops and to the general sanitary improvement of the town as a whole in mat-

2. The Circulation and Muscular Efficiency, Current Comment, THE JOURNAL A. M. A., Sept. 13, 1913, p. 874.

1. U. S. Pub. Health Rep., Sept. 25, 1914.

ters of drainage, fly-breeding conditions, and general cleanliness.

The most interesting feature of the work, next to its promptness and thoroughness, is the very low cost at which it was carried out. Exclusive of plumbing inspection, which is not properly a board of health function, the total cost of the work was 19 cents per capita per annum. The total population served was 62,000 persons, 32,000 of whom received only the milk inspection service. The work which was begun as a practical experiment in the science of public health administration has been continued by the towns interested on a considerably enlarged basis with a sufficient appropriation to make it self-supporting and, what is more important than all else, with the cordial support and backing of an enlightened public opinion.

The great value of the report is to show, in a convincing way, that the problem of providing for the health work of small communities can be taken care of in a feasible and satisfactory way at a reasonable cost. It is hoped that other communities will take up this movement.

AN EXPLANATION OF LIPEMIA

The occurrence of fats or lipoid substances in the blood to a degree which renders the serum more distinctly cloudy or milky than usual may have either a normal or a pathologic import. The various manifestations of lipemia cannot at present be interpreted or explained on a single basis applicable to all the known instances. After a meal rich in fat, when the thoracic duct is pouring a creamy chyle into the blood-stream, the serum may give evidence of a very pronounced lipemia because the fats are being contributed to the circulation more rapidly than they can be withdrawn from it into the storage depots. A temporary accumulation in the blood thus takes place. This is not observed in all individuals alike, however; for there are species, like the rabbit, in which a physiologic lipemia of dietary origin rarely if ever takes place. In health the disposal of the fat keeps pace in such animals with its contribution to the blood-current, with a nicety of regulation reminding one of the adjustments in regard to the content of blood-sugar. The lipemia observed in other species after feeding is transitory at most.

Under a variety of pathologic conditions a pronounced lipemia may arise often independently of the food intake. Increased fat content of the body is observed quite regularly in starvation, in different forms of anemias and cachexias, in diabetes and particularly in severer stages of the disease, in chronic alcoholism, after prolonged narcosis, and in certain kinds of intoxications. In all of these conditions the inanition factor, leading to a transport of fat in the body, may come into play.

What is the cause of these lipemic states? A lack of oxidative capacity on the part of the abnormal organism was at one time suggested in explanation. Decreased oxidation in the body is among the physiologic rarities and can scarcely be held to account for the lipemic alterations in the blood, particularly in view of our ignorance as to the way in which fat is catabolized in the organism. Again, it was customary to assume that the fat in lipemia arises partly from the food, partly from fatty degeneration of the cells of the blood, the vessel walls and the viscera. The newer views regarding fatty infiltration versus degeneration give no support to such hypotheses.

Turning to probabilities more likely in the present state of our knowledge of fat metabolism, it is conceivable that, in lipemias not attributable to undue fat intake, fat is discharged into the circulating blood from some endogenous source at a rate far exceeding its subsequent removal therefrom. If this were the case, then the storage places ought soon to be emptied of their reserves of fat. As a matter of fact, this is not always the case in lipemia. We are thus left with a final hypothesis that the fat is dammed up, as it were, in some way in the blood and cannot escape either back into the tissues or to the usual seats of its destruction. In other words, it may be that pathologic lipemia results because the blood has lost its lipolytic power so that the fat is no longer converted into forms that can traverse the capillary walls to the places where it is normally consumed.

The existence of fat-hydrolyzing enzymes — lipases or esterases—in the blood has been alternately affirmed and denied, but must at present be looked on as demonstrated.[1] The researches of Sakai[2] render it probable, to say the least, that an abnormal decrease in the serum lipase is one of the factors, if not actually the decisive one, in accounting for the inability of the blood to get rid of its fat in certain forms of pathologic lipemia. This can be brought about, for example, by repeated hemorrhage in rabbits. The anemia thus produced has been demonstrated by Boggs and Morris[3] to be attended with a milky turbidity of the blood-serum sufficient in some cases to alter the appearance of the entire blood noticeably. The diminished content of serum lipase usually precedes the appearance of the visible enrichment in circulating fat. According to Sakai, two agencies are accordingly involved in the genesis of a lipemia. One is the factor which furnishes the fat. This may be endogenous and derived from fat transport out of the tissues, or exogenous and of dietary origin. The other factor leading to a prolonged lipemia, in contrast with the transitory types accounted for by dietary considerations, involves

1. Rona and Michaelis: Biochem. Ztschr., 1911, xxxi, 345; xxxiii, 413. Davidsohn: Ibid., 1913, xlix, 249. Izar: Ibid., 1912, xl, 390. Bauer: Wien. klin. Wchnschr., 1912, No. 37, p. 1376.
2. Sakai, S.: Zur Pathogenese der Lipämie, Biochem. Ztschr., 1914, lxii, 387.
3. Boggs and Morris: Jour. Exper. Med., 1909, xi, 553.

the inability of fat that has reached the blood-serum to leave it. It is this significant feature of fat stagnation which the lack of lipolytic enzyme in the blood is now believed to explain.

Chemical examination of the fatty material present in the blood in some of the experimental types of lipemia has shown that the increase in fats is attended with augmentation of the cholesterol present, though the latter is never increased to the same extent that the fats proper are. Cholesteremia has been described to occur under various conditions; but Sakai believes that the increase of cholesterol in lipemia is a secondary consequence, attributable perhaps to the ready solubility of cholesterol in fats and the ease whereby it forms esters with fatty acids. Despite the accompaniment of fat and lipoid in certain lipemias, the possibility of cholesteremia without noteworthy lipemia still remains.

THE OHIO STATE UNIVERSITY, MEDICAL EDUCATION AND FADS

A year and a half ago, by legislative enactment, the trustees of the Ohio State University were authorized to create "a college of medicine." In accordance with that authority they accepted as a gift the valuable properties of the Starling-Ohio Medical College, of Columbus, a well-equipped and well-established Class A institution. Plans were made to provide additional financial support and announcements were published that this fall and a year hence the entrance requirements would be increased, respectively, to one year and two years of collegiate work. Thus far the trustees had acted with unquestioned and commendable caution.

Then to the surprise of many friends of the university, the trustees proceeded to create a homeopathic medical college. Had this been done with a careful regard for educational standards and provision for equipment and for clinical material equal to that which was used in creating the college of medicine, there would have been less room for criticism; but for the homeopathic college, instead of having a high-grade, thoroughly equipped institution to start with, this new venture was begun by taking over what there was left of the Cleveland-Pulte Medical College of Cleveland, a Class C institution reported to be not recognized by the licensing boards of at least twenty-seven states! Even the friends of that institution had considered its future as hopeless. Then, instead of requiring a year of collegiate work for entrance to this homeopathic college, it is announced that only a high-school education is to be required, notwithstanding the fact that these students will be taught for the first two years the same subjects, in the same classes and by the same teachers as the students in the college of medicine. It is also a strange announcement that, for each of these first two years, the students enrolling in the homeopathic college are to be charged only $125, while those entering the college of medicine are to pay $150. Again, whereas, the clinical material for the college of medicine includes the facilities provided by two large hospitals having a total of over three hundred beds, besides such facilities as are obtainable in several other hospitals and in two large dispensaries, for the homeopathic college, it appears that the only provision is an old, abandoned dormitory, no patients as yet being in evidence.

If a homeopathic college was to be started, why was not the same excellence of equipment provided as for the college of medicine; why the inadequate provision for clinical instruction; why the smaller fees charged and especially, why the lower entrance qualifications demanded? Was the opening of a homeopathic college of such extreme importance as to warrant these wide variations? Why is it that lower entrance qualifications have for several years been granted for homeopathic students by the University of Michigan and are now granted by the Ohio State University?

The most surprising action of the trustees, however, was the creation of a school of optometry, thus giving the university's name to what, in common practice, has all the earmarks of another fad in drugless therapy. Here again, the objection is not so much to the teaching of courses in optometry, as to the lowering of entrance standards and to the misleading and unwarranted dignity given to an unprofessional occupation by expanding such courses into a special "school." Of course, those who are to fit eye-glasses need to have a knowledge of physics and of refraction, but that is no reason why such students should be admitted to college courses after only two years of high-school education. Nor is it a reason why the university should encourage a school the "graduates" of which, if the customary practice is followed, and regardless of their limited training, will pose as "specialists" in all the diseases of the eye!

If the Ohio State University is going to establish any "school" having such low entrance requirements,[1] why stop with optometry? Why not start a school of osteopathy, which is a much older system and has been more thoroughly advertised than optometry? Why not start also a "school" of chiropractic, a "school" of physcultopathy, a "school" of nahprapathy and others for each of the endless lot of "sects" and "systems" which are claiming exemption from fair educational standards? One is surely as worthy of such dignity as another. If educational standards are to be lowered for one, why not for all? This is indeed a serious matter, and it is high time that even politicians should be brought to realize that medicine is now a science and that science knows neither isms nor schools.

1. A "school," according to the common understanding of educators, and according to a definition adopted by the Association of American Universities, is a part of a university, for admission to which two years of collegiate work are required.

Meanwhile, it is understood that this "recognition" by the Ohio State University is to be made great use of by the optometrists of Ohio in their efforts to secure the passage of legislation giving them a special licensing board and special exemption from the provisions of the medical practice act. It is a question whether the same influences which seem to have prevailed with the trustees of the Ohio State University will also succeed in breaking down the laws which thus far have provided the same educational qualifications for all who are to practice the healing art. If they do succeed, then the only barrier which stands between the sick and suffering people of that state and the hordes of illiterate and incompetent would-be-practitioners will be thrown down. We are not willing to believe that the people of Ohio will ever permit such a misfortune to happen. Surely, they are as much entitled to protection against uneducated physicians as are those of any other state.

THE RELATION BETWEEN THE COLOR OF THE BODY-FAT AND THE BREED OF CATTLE

The demonstration of the origin of the characteristic yellow colors which are found in milk-fat, the corpus luteum, etc.,[1] brings a reminder that it is not uncommon to find the body-fat of cows, especially of the Jersey and Guernsey breeds, characterized by a very high yellow color. This has led to the belief that this phenomenon is characteristic of only those breeds. As a matter of fact, butchers and the consumers also look with disfavor on beef from these animals on account of the high color of the fat. Palmer and Eckles[2] have shown that the color of the body-fat of Jersey cows is as much dependent on the food as is the color of the milk-fat. In studying the normal breed relations, the popular opinion that the body-fat of Jersey cows is normally characterized by a higher yellow color than Holstein cows has been at least partially confirmed by experimental study, although it was found that Holstein cows may also possess high-colored body-fat. At least, there seems to be more breed characteristic in this respect than in the case of the pigmentation of the milk-fat. Palmer and Eckles assure us that there is no foundation for the belief that beef has a lower value because its fat has a high color. If this pigment is the same as is demanded by the consumer for butter, why, they ask, should not beef with high-colored fat also be more desirable? It is recognized, of course, that some of the unfavorable attitude toward beef with highly colored fat arises partially from the fact that it indicates that the beef probably came from a dairy cow.

When there is need of fat either for combustion or for milk production, and an adequate amount is not furnished preformed in the ration, this nutrient is mobilized from the storage depots in the organism. Here not only fats, but also ingested lipochromes may become deposited. The normally high color of the body-fat of Jersey cows, and also of Guernsey cows explains why cows of these breeds often appear to be producing well-colored butter on a ration deficient in carotin and xanthophylls. When cows whose body-fat has a high yellow color are put on a ration deficient in carotin and xanthophylls, and also, as is usually the case with such rations, deficient in food-value, the body-fat is called on to furnish energy for the animal and also in many cases to supplement the food digestion products in the production of milk-fat. It is readily seen that in such cases an important source is opened up for pigments for the milk-fat. The importance of this source would depend on the amount of highly colored body-fat available for the needs of the body, and on the rapidity with which it would be used up.

It is interesting to note that the skin secretion of Jersey (and Guernsey) cows is often characterized by a more or less yellow color. This is considered by the breeders of these cattle to indicate their ability to secrete yellow milk-fat. The yellow skin pigment is sometimes very abundant in the waxy secretions in the ears of these animals. The pigments which characterize the skin secretions of the Jersey breed are the same pigments that are found in the milk-fat and body-fat. This characteristic is by no means indicative of the ability of the breeds to secrete yellow milk-fat under all conditions. The only indication of this is whether the food contains an abundance of carotin and xanthophylls.

The color of butter, that is, milk-fat, has been the subject of much misconception in relation to the supposed dietary value of the product. Americans are at length learning to enjoy butter independently of a "high" color or a liberal admixture of salt, neither of which is apparently essential to the fat itself. Palmer and Eckles remind us that the yellow body-fat of Jersey and Guernsey cows should not be a point against the use of these animals for beef. The pigments here are the same as those for which the consumer will pay a higher price when present in butter.

1. The Natural Yellow Pigments Occurring in the Body, editorial, The Journal A. M. A., Sept. 12, 1914, p. 948.

2. Palmer, L. S., and Eckles, C. H.: Carotin—The Principal Natural Yellow Pigment of Milk-Fat: Its Relations to Plant Carotin and the Carotin of the Body-Fat, Corpus Luteum and Blood Serum. I. The Chemical and Physiological Relation of the Pigments of Milk-Fat to the Carotin and Xanthophylls of Green Plants. II. The Pigments of the Body-Fat, Corpus Luteum and Skin Secretions of the Cow, Jour. Biol. Chem., 1914, xvii, 191.

A Point Sometimes Forgotten.—We cannot possibly tell whether a treatment is good or bad unless we know what is the natural course of the disease. Over and over again good results are ascribed to treatment quite unjustly; the patient has got well because in the natural course of the disease he would do so; treatment has had nothing to do with it.—W. Hale White, *Lancet.*

Current Comment

SUCH IS "LIFE"

Life, as most of our readers know, is a bright and interesting humorous weekly published in New York City. To physicians *Life* is of interest because of its systematic blackguarding of the medical profession. Anything medical makes the editor of *Life* see red, and much talent has been utilized by *Life* to discredit the triumphs of modern medicine and to support the various organizations that make a profitable business of opposing scientific medicine. For some years *Life* has acted as the unofficial organ of the antivivisectionists, and no libel on the humanitarianism of medical men has been too gross for *Life* to give it publicity. *Life's* reactionary attitude in matters affecting public health is further emphasized by some of its advertisements. The dangerous and fraudulent acetanilid preparation "Bromo-Seltzer" has, for a consideration, been heralded through the pages of *Life* as a "cure" for headache; the corpulent readers of *Life* have been urged to take "Fat-Off," a worthless and fraudulent nostrum, sold as an obesity cure and characterized by the government chemists as a "paste made of soap and water" in the proportions of one of the former to nine of the latter; "Odorono," exposed in THE JOURNAL, Jan. 3, 1914; and the fraudulent "Morley Ear Phone" (see THE JOURNAL, Nov. 22, 1913) are both given space in recent issues of *Life;* the current number contains a half-page advertisement of "Buffalo Lithia Springs Water" (one dose of lithium to every 200,000 gallons of water) recommending it for "Bright's disease, renal calculi, stone in the bladder, albuminuria, rheumatism and gout." For further advertising frauds given space in *Life* see the Propaganda department of this issue. All this is by the way. The reason for this comment is to bring before our readers a letter recently written to *Life* by a layman, Mr. Charles H. Fahs of Madison, N. J. Mr. Fahs wrote:

"Dear *Life:* You take your fling, and you must. That's your mission. But listen!

"When Death first struck near me I was but 4 years old, and it was my little sister that went—spinal meningitis. Serum therapy was yet to be. Last year my only boy lay in convulsions—spinal meningitis. A fast auto ride to a Brooklyn hospital. Antimeningitis serum used. Not another convulsion thereafter. I thanked God for Simon Flexner and his ilk and took courage. What would you have done? How would you have felt?

"When Death struck near me the second time it was a baby brother that went—diphtheritic sore throat. Antitoxins were unheard of as yet. When I took my family abroad for a winter three years ago, I felt easier when I discovered that the German town we had chosen for our stay had a high-grade laboratory where the diphtheria antitoxin had been developed. How would you have felt?

"When Death struck near me the third time, again it was a younger brother who was claimed—infection following vaccination against small-pox which was active near by. We learned later that the alleged doctor who did the vaccinating had neither legal nor moral right to hang out a shingle, and bitterness was in my heart. Two years ago I was about to start for a long journey through Asia where small-pox was to be met with on every highway. In spite of sad memories, I had myself vaccinated before I sailed. What would you have done?

"During the Spanish War I saw Death when its name was Legion. A score of times on a single afternoon I heard the muffled drums and saw the reversed arms as the melancholy processions left the fever hospitals. Inoculation for typhoid was unknown. On that far Eastern trip of two years ago I was to face possible typhoid infection at almost every meal time. I was inoculated for typhoid before I started. What would you have done?

"Seven years ago, physically undone, I lay in a hospital while capable and faithful physicians sought to ascertain the obscure cause of it all. Finally I was asked whether I was willing to undergo the tuberculin test (hypodermic) for diagnostic purposes. I consented. The reaction was severe, but it pointed the way, and the subsequent treatment for tuberculous peritonitis brought me back to health. Would you have consented?

"As a lonesome boy on the farm I had a collie as a servant, companion and pet. Because of disease he had to be shot, and my heart was broken. Never have I had a pet since. But I have children, and I am willing for all the dogs and cats and guinea-pigs to be sacrificed if these precious ones can be better protected against the hostile microbes of various kinds, that have cost my home the life of one child and severe if not desperate illnesses for each of the other three within a single year.

"The profession of medicine has not succeeded in isolating itself entirely from carelessness, inefficiency, selfishness, or even from hardness of heart with respect to suffering on the part of animals or folks, but I know too many physicians of a noble type, men of high worth in head and hand and heart, to subscribe to any broad indictment of the profession's personnel or processes.

"In a word, *Life*, I think you're honest, but I don't think you're fair."

The letter, however, was not published in *Life* but was returned to Mr. Fahs as "not available." Presumably it was not "funny" enough. It appeared in *The Journal of the Outdoor Life* for September.

PUBLIC SCHOOL COURSES FOR ADULTS IN HEALTH PRESERVATION

The popular conception of what constitutes education is growing and our ideas as to the usefulness and effectiveness of our public school system are continually broadening. The latest idea comes from Rochester, New York, where the Board of Education, in response to a petition signed by three thousand citizens of Rochester, has instituted in the public schools a course of instruction for adults, to be given outside of school hours, by which one may learn, in the language of the announcement, what diseases are preventable, how the body can be made better able to resist disease, how to nurse scientifically when home nursing is necessary, how to observe and report symptoms to the doctor, what to do in emergencies and (quite as important) when to do nothing until the doctor arrives, what food is proper for the sick and how to prepare it, how to care for children and how to make the aged comfortable. This course, instituted in an experimental fashion last winter, is to be repeated during the coming year. The motto adopted by those in charge might well be made the battle cry of the entire educational movement for better public-health conditions: "Applied knowledge is the only known way for preventing and curing sickness." The announcement states that the ultimate object is to obtain for every one the longest possible period of the greatest possible usefulness and enjoyment. "Live a Little Longer"—the

title of the leaflet containing the announcement — is simply a graphic and epigrammatic way of emphasizing the same idea. The recognition by the Rochester Board of Education that it has a duty and responsibility, not only to schoolchildren, but also to the entire community, and that the most important subject it can teach is how to keep well, sets a new and high standard for other boards of education.

PREVENTING TYPHOID FEVER

The Kentucky State Board of Health is doing some effective work in educating the public of that state regarding health matters. The last number of its *Bulletin* received is devoted to the prevention of typhoid fever. Accompanying the *Bulletin* is a large poster, setting forth the advantages of vaccination for typhoid fever, and enumerating over 270,000 vaccinations which were without harmful results and with enormous reduction in the sick rate. The statistics cover the experience of the United States Army, the British Army in India, and the Japanese Army, and include other data regarding the effectiveness of the use of typhoid vaccination. This poster is an example of some of the efficient methods of publicity now being used by modern health officials. While the *Bulletin* may be read by scores, this large and attractive poster will be read by thousands, and is bound to be of service.

Medical News

CALIFORNIA

Personal.—Dr. Aaron S. Green, San Francisco, has returned from a trip around the world.

European Travelers.—Dr. Gustavus C. Simmons, Sacramento, has reached Paris on his way home.——Drs. Manuel M. Enos, Oakland, and Henry Horn, San Francisco, have returned from abroad.

COLORADO

Personal.—Dr. Oscar J. Pfeiffer, Denver, and Dr. and Mrs. William A. Kickland, Fort Collins, have returned from abroad.——Dr. Ray L. Drinkwater, has been appointed secretary of the Denver Municipal Clinic to succeed Dr. Asa Z. Hall, resigned.

Health Seekers' Bureau Established.—A health seekers' bureau which will give free advice and information to newcoming tuberculosis patients, has been established by the Visiting Nurses' Association of Denver with offices in the Temple Court Building. The bureau will be open for free consultation from 9:30 to 11:00 on Monday and Thursday mornings.

State Association Meeting.—The annual meeting of the Colorado State Medical Association in Boulder, September 8 to 10, was the largest in the history of the organization. Resolutions advancing a law establishing a public health commission, and closer cooperation between physicians and druggists in restricting the sale of dangerous drugs, were adopted. The following officers were elected: president, Dr. George B. Packard, Denver; vice-president, Dr. Ella A. Mead Greeley; secretary, Dr. Crum Epler, Pueblo; treasurer, Dr. William A. Sedwick, Denver; and councilors, Drs. James A. Matlack, Longmont and Edgar Hadley of Telluride.

CONNECTICUT

Personal.—Dr. Owen O'Neill, Willimantic and Dr. and Mrs. Edward W. Smith, Meriden, have returned from abroad.

Infirmary Accepted.—At the weekly meeting of the State Tuberculosis Commission held in Shelton, the new infirmary erected at a cost of $25,000 was formally accepted from the contractor.

Wants Medical Inspection.—The town school committee of Danbury has voted to ask the town board of finance for an additional appropriation of $1,500 for the establishment of a system of medical inspection in the schools of the town.

ILLINOIS

Personal.—Dr. Edmund G. Sugg, Leland, sailed from Seattle September 26 for Shanghai, China, where he will be in the employ of the Chinese government.——Dr. and Mrs. Burdettee E. LaDue, Ottawa, have returned from abroad.

Hospital Buys Property.—A piece of property, 109 x 125 feet in extent at Wisconsin Avenue and Monroe Street has been purchased by the Oak Park Hospital and Training School for Nurses of the Sisters of Misericorde, for a nominal consideration.

Chicago

Housing Conditions in Evanston.—In a meeting of the Evanston Tuberculosis Society, held recently, the question of housing conditions in Evanston was considered; and it was urged that the society bring the situation before the city council.

Infantile Paralysis on North Shore.—Infantile paralysis has been frequent along the north shore. Four cases are reported in Highland Park, five in Waukegan, and one has occurred at Grays Lake. The authorities have stated that if new cases continue to occur schools will be closed as well as picture houses.

INDIANA

Personal.—Dr. Frank L. Sharrer, Francesville, has been appointed chief surgeon of the Guthrie, Okla., City Hospital.——Dr. Arthur E. Guedel has been appointed superintendent of the Protestant Deaconess Hospital, Indianapolis, to succeed Dr. A. L. Marshall. Dr. Marshall has resigned in order to enter the practice of the eye, ear and throat in Indianapolis.

Tristate Colored Association Formed.—On September 9, at Indianapolis, representatives of the colored physicians, dentists and pharmacists of Indiana, Ohio and Kentucky, formed a tristate association and elected the following officers: Dr. William A. Method, Columbus, president; Dr. William J. Woodlin, also of Columbus, Ohio, vice-president; Dr. Henry W. Armistead, Indianapolis, secretary, and Dr. Abram L. Cabell, Terre Haute, Ind., treasurer. The first regular meeting will be held at Columbus, Ohio, next July.

State Society Meets.—The Indiana State Medical Association met at Lafayette, Ind., September 23, 24 and 25. The following officers were elected: president, Dr. Frank B. Wynn, Indianapolis; first vice-president, Dr. Edgar R. Cox, Kokomo; second vice-president, Dr. Spencer W. Smith, Wabash; third vice-president, Dr. W. J. Malloy, Muncie; secretary, Dr. Charles N. Combs, Terre Haute; treasurer, Dr. David W. Stevenson, Richmond; delegates to the American Medical Association, Dr. Charles H. Good, Huntington, and Dr. Miles F. Porter, Fort Wayne; alternates, Dr. Charles A. White, Danville, and Dr. Anexamander M. Hayden, Evansville. Indianapolis was chosen for the next meeting. A recommendation was made to the governor and the state legislature, that a commission of experts be appointed to codify the laws of the state, concerning health, on sale of drugs and other similar measures. A grant of $200 was made to the pathological exhibit to be used for prizes each year.

Plans for Disease-Prevention Day.—Great plans are being made for Disease-Prevention Day, October 2. One of the important features will be a parade containing numerous floats illustrating graphically the various phases of disease prevention. In the evening a mass meeting will be held. All the business houses have promised window space to disease-prevention exhibits, and in newspaper advertising many of the department stores are pointing out the various ways in which health is conserved in their buildings. Not only in Indianapolis, but also in the small towns of the state, programs are being planned. The feature event in Terre Haute will be a monster parade with drill teams from every city school, floats from the various business houses, several bands, civic organizations and military divisions. The schoolchildren will carry banners on which will be printed rules on health and disease prevention. The newspapers of the various towns and villages are all publishing many editorials devoted to the subject of health. Thus it is stated by the Huntington *Herald:* "We believe that home making should be regarded as a profession, that right living should be the fourth "R" in education; that health is the duty and business

of every individual." Among mottos which are recommended are "All for Health—Health for All" and "Know Your City."

IOWA

Small-Pox Bulletin Issued.—The Iowa State Board of Health is sending out a special bulletin on small-pox to county auditors and superintendents for free distribution among the people. Copies can also be obtained by addressing the secretary, Dr. Guilford H. Sumner, State Board of Health Office, Des Moines, Iowa.

LOUISIANA

New House Officers in Charity Hospital of New Orleans.—On recommendation of Superintendent Wilkins, Dr. Adolph Jacobs and Dr. Warren Scott were elected house officers for the coming year, and Dr. Fernandez admitting physician.

School of Tropical Medicine.—Dr. William H. Seemann, bacteriologist of the State and City Board of Health, has been elected dean of the Tulane University School of Hygiene and Tropical Medicine. He succeeds Dr. Creighton Wellman who resigned a year ago.

Personal.—Dr. Gustav Mann of Tulane University Undergraduate and Dr. Charles L. Chassaignac of the Post Graduate School have recently returned from Europe.——Dr. Otto Joachim has been detained in Germany and is serving in the Military Hospital in Landau.——The United States Public Health officers on plague duty in New Orleans entertained their friends of the medical profession at mess, Galatoire's Restaurant on Sept. 18, 1914.

MARYLAND

Personal.—Dr. William C. Gorgas and Miss Mabel Boardman, president of the Red Cross, were the chief speakers at a meeting of the Red Cross Society, which was held in the City Hall, Baltimore, on September 23. Dr. Thomas Buckler has returned to Baltimore from a tour of Europe.

Report of Medical Inspectors of Schools.—The medical inspectors of schools found 13,353 pupils in the public schools suffering from physical defects last year, according to the annual report of the Health Department. It is stated that 4,437 were cured and 3,129 improved, while 5,189 were not improved by treatment. Nearly 3,000 children in the parochial schools were found with various defects. Of this number 921 were cured and 527 improved, while 1,619 were unimproved.

MINNESOTA

Investigation Causes Transfer of Patients.—As the result, it is said, of an investigation of the Hastings State Hospital, held in August last with especial reference to patients afflicted with tuberculosis, six tuberculous patients have been transferred from that institution to the St. Peter State Hospital.

Transferred to New Hospital.—Tuberculosis patients are being transferred by the board of control into the new Tuberculosis Hospital on the grounds of the City and County Hospital, St. Paul. Fifty of the hundred beds in the new hospital will be occupied at once and the remainder held in reserve. The institution at Cuenca will be held open, and the state will probably continue to send patients of tuberculosis to the State Sanatorium at Walker.

Tag Day for Preventorium.—Tag day will be held in St. Paul, October 1 and the proceeds, instead of being devoted to the general work of the campaign against tuberculosis, will be appropriated to the establishment of a children's preventorium in St. Paul, an institution where children from families in which tuberculosis exists or living under conditions predisposing to tuberculosis, may be given outings in the summer and the privilege of the fresh-air school in the winter. It is announced that $5,000 will be sufficient to start the project.

MISSOURI

Missouri Physicians Abroad.—Dr. Joseph E. Sawtell, Kansas City, has reached London on his way home.——Dr. James W. Heddens, St. Joseph, is in London and expects to reach home early this month.——Drs. Floyd H. Spencer and Joseph J. Bansbach, St. Joseph, and Dr. and Mrs. Edward G. Blair, Kansas City, have returned from Europe.

Laboratory for St. Joseph.—At the Missouri Conference of the Methodist Episcopal Church, South, plans suggested by Dr. Daniel Morton for a medical research laboratory to be maintained in St. Joseph by the church, were adopted. It is thought that $25,000 will be sufficient to insure the establishment and successful maintenance of the institution.

New Emergency Hospital at St. Joseph.—The city council September 14, decided to convert the old pesthouse into an emergency hospital and to erect a smaller building for a pesthouse near by. Ordinances have been introduced appropriating $2,000 for remodeling the old pesthouse into an emergency hospital and $2,500 for building the new pesthouse.

Personal.—Dr. William J. Frick has been elected president of the medical staff of the Kansas City General Hospital.——Dr. Clarence P. Pickett, Trenton, has resigned as physician of Grundy County.——Dr. George Halley, for many years a prominent surgeon of Kansas City and who retired from practice three years ago, celebrated his seventy-fifth birthday anniversary, September 11.——Dr. Howard Hill has resigned from the surgical staff of the Kansas City General Hospital.

Banquets to Physicians.—Sixty-one members of the new staff of the Kansas City General Hospital were the guests at a dinner September 17 of the hospital and health board. Thomas M. Finn, president of the board, officiated as toastmaster.——About one hundred physicians of St. Joseph were the guests of Dr. Charles R. Woodson at the Woodson Sanitarium at a dinner which marked the first fall session of the Buchanan County Medical Society. Dr. Joseph J. Bansbach presided.

St. Louis

Personal.—Dr. Solomon A. Weintraub has returned after a year abroad during the last month of which he was in charge of a military hospital at Königsberg, Germany.——By the will of Dr. Martin Hayward Post, a bequest of $30,000 was made to his widow in lieu of dower rights.——Dr. Charles H. Eyermann has succeeded Dr. Ralph A. Kinsella, resigned, as chief resident physician of the City Hospital.

NEBRASKA

Personal.—Dr. Nelle G. Carr Deffenbaugh has resigned as superintendent of the Kearney Tuberculosis Hospital and will be succeeded on November 1, by Dr. Edwin R. Van der Slice, at present assistant superintendent of the Tuberculosis Sanatorium at Mt. Alto, Pa.——Dr. Paul A. De Ogny has been appointed local surgeon for the Burlington system at Milford.——Dr. W. C. Purviance, who has been for six years in Corea as a medical missionary in charge of the Presbyterian Hospital, has located in Beatrice for practice.——Dr. Rachel A. Watkins, York; Dr. and Mrs. August F. Jonas, Omaha, and Dr. and Mrs. Elmer R. Porter and two children, Omaha, have returned from abroad.

NEW YORK

New York City

Personal.—Dr. and Mrs. John A. Fordyce and Dr. John R. Dickson have returned from Europe.——Among the surgeons who sailed for France on September 26 on the staff of the American Ambulance Hospital are Dr. Richard Derby and Dr. Joseph P. Hoguet.——Dr. and Mrs. Leonard A. Dessar have returned from Europe.——Dr. Robert W. Hinds of Buffalo has been appointed to take charge of one of the units of the American Red Cross which is assigned to England.

Physicians Must Register with Department of Health.—In the city of New York the Sanitary Code, Section 160, makes it mandatory for all physicians practicing within the city limits to register at the office of the Bureau of Records of the Department of Health in the borough in which they intend to practice. To do this the physician must present his license to practice medicine or the county clerk's certificate. No certificate of death, birth or still-birth will be accepted from a physician who is not registered in the Department of Health.

NORTH CAROLINA

One Sixteenth Disqualifies.—The supreme court of the state, in the case of Johnston vs. Wilson County School Board, holds that an admixture of one-sixteenth of negro blood is sufficient to disqualify a child for admission to a school for white children in the state.

Extension of Hookworm Campaign.—The hookworm bureau of the State Board of Health has added to its force Dr. W. H. Kibler of Morgantown who is to begin work at Mount Pleasant, Nash County. His work will supplement but not supersede that of Dr. M. E. Champion at Red Oak in the same county. Similar work is being done at Salemburg, Sampson County; Wrightsboro, New Hannibal County; Hallsboro, Columbus County, and Philadelphus, Robeson County. Satisfactory reports are received from all these communities and the work in some is nearing completion.

Progress on the Work of the Rockefeller Hookworm Commission.—Encouraging results are reported by Dr. M. E. Champion in charge of the dispensatory at Red Oak, Nash County. Over one thousand persons have been examined and 26 per cent. found infected. The percentage of whites infected is greater than that of the colored. All are ready to cooperate enthusiastically in eradicating the disease.——Dr. W. H. Kibler, Morganton, has taken charge of the community health work of Mt. Pleasant, under the supervision of the hookworm department of the State Board of Health.

Memorial Tablet Presented.—The Medical Society of the State of North Carolina presented a bronze tablet in memory of Dr. P. L. Murphy, for twenty-five years superintendent of the Morganton State Hospital, to that institution, September 19. Dr. John McCampbell, superintendent of the institution, accepted the gift in behalf of the hospital staff. Under the bust of the deceased in bas relief is the legened—"To the memory of Patrick Livingston Murphy, 1848-1907. The beloved physician and gifted alienist who organized this hospital and who was the superintendent for the first twenty-five years of its existence, in January, 1883, until his death Sept. 11, 1907."

OHIO

Personal.—Dr. John M. Withrow has resigned as a member of the board of hospital commissioners for the building of the new general hospital.

Municipal Research Expert Visits Dayton's Health Department.—L. G. Lindholm of the New York Bureau of Municipal Research visited Health Officer Light recently and conferred with him concerning various problems confronting the local department. He expressed a favorable opinion of the various public health activities and especially of the work of the Visiting Nurses' Association.

Cleveland School Authorities War on Disease.—Dr. E. A. Peterson, director of medical inspection in the public schools, has launched a campaign to restrict communicable diseases. Fifteen physicians and twenty-one nurses began work on September 15. Every boy and girl in the elementary grades will undergo a complete physical examination and records will be kept on a card-index file. Especial attention will be given to the restriction of communicable diseases.

County Commissioners Cannot Provide Public Comfort Stations.—In a recent ruling Attorney-General Hogan held that county commissioners in Ohio cannot install comfort stations for the use of the general public. He holds that only such toilet accessories may be provided as are necessary for official use by county officers in county buildings. A movement has been on foot in several counties to build comfort stations for the general public. The law in this respect should be amended.

Military Surgeons Meet.—The annual meeting of the Association of Military Surgeonse of the United States to be held in Cincinnati during the week, September 29 to October 2, inclusive, presented a program of unusual excellence. A number of semipublic meetings were arranged: a reception to Surgeon-General William C. Gorgas on the evening of September 29; a public meeting of the association on September 30, at which the insignia of the association was to be presented to visiting delegates, and at which addresses were to be made by the mayor of the city, the governor of the state, the president of the local academy of medicine, Dr. Allen B. Thrasher, and others. On the afternoon of October 1, a visit was arranged to the new Cincinnati General Hospital, followed by an inspection of the First Field Hospital, Medical Department, Ohio National Guard, at the Zoological Garden and supper at the garden. Dr. Rufus B. Hall is chairman of the reception committee. A banquet was also tendered General Gorgas on the evening of September 28.

PENNSYLVANIA

Official Bulletin of Health.—Director James F. Edwards of the Department of Public Health of Pittsburgh, has begun the issue of a monthly bulletin known as *"The City's Health,"* the first issue of which appeared this month and is devoted to the care of babies.

Personal.—Dr. Olin K. McGarrah, Altoona, has been appointed medical inspector for the Department of Commerce and Labor for Altoona and Juniata, Blair County.——Dr. Thomas H. A. Stites, Scranton, chief inspector of dispensaries of the State Board of Health, has been appointed medical director of the new State Sanatorium, Hamburg.——Dr. Karl Schäffle has succeeded Dr. Stites as inspector of dispensaries.

Meeting of State Medical Society.—The meeting of the Medical Society of the State of Pennsylvania held in the Carnegie Institute, Pittsburgh, September 21-24, was attended by over a thousand members. The secretary reported a net increase during the past year of 499 members. The well balanced scientific program commanded the interest of specialist and general practitioner. Numerous clinics were conducted at the local hospitals preceding and following the scientific meetings. The commercial exhibit, with the registration bureau, was housed in the foyer of the Carnegie Music Hall. Here, too, was the scientific exhibit where the University of Pittsburgh showed charts and drawings made by students, together with pathologic specimens from the university's museum.

A public meeting was held on the evening of the 22d, at which Prof. L. O. Howard, Washington, D. C., gave a stereopticon lecture on "Some Insects that Carry Disease"; and on the following afternoon an open meeting for women was conducted by the Committee on Public Health Work Among Women. The ninth annual banquet and conference of secretaries of county societies was held at the University Club on the evening of September 22.

Dr. John B. McAlister, Harrisburg, was elected president.

TENNESSEE

Personal.—Drs. Eugene M. Holder, Otis S. Warr and Herbert T. Brooks, Memphis, have returned from abroad.

Pellagra Survey.—Dr. Blackburn G. Tucker, Nashville, who has just completed the sanitary survey of the tenth civil district, has found in one community forty-two actual cases of pellagra, seventeen in males and twenty-five in females, and eight suspicious cases. Poor food-supply and bad hygiene were found present wherever the infection was heaviest. All the patients were white.

TEXAS

Personal.—Dr. and Mrs. Edward H. Cary, Dallas, and Dr. J. Bedford Shelmire, Dallas, have returned from abroad.

Campaign against Hookworm.—The campaign against hookworm will be begun about October 1. Every schoolchild in the county will be examined and treatment will be furnished free at four depots in the county—September 5 marked the end of the campaign against hookworm in Bell County. The state hookworm commission made 200 examinations, but found only one case.

Field Work against the Hookworm.—Dr. E. M. Outlaw of Palestine has been appointed field director of the hookworm commission to succeed Dr. O. H. Judkins, who resigned to take charge of the health-administration train of the State Board of Health. Dr. Outlaw will extend the campaign in Nacogdoches County another week, making it close about October 1. Of 564 children of school age examined within the county, 332, or nearly 59 per cent., were found infected. The general percentage of infection is about 34 and that in the smaller Mexican population over 90.

UTAH

Home from Abroad.—Dr. Richard A. Pearse, Brigham; Dr. and Mrs. Fred W. Taylor, Provo; Dr. and Mrs. Andrew J. Hosmer, Salt Lake City; Dr. and Mrs. Ezra C. Rich and family and Dr. and Mrs. Le Roy Pugmire, Ogden, have returned from abroad.

Roof Garden Sanatorium.—Dr. Crayton C. Snyder, physician of Salt Lake County, has opened an open-air tuberculosis ward on the roof of the Salt Lake County Hospital. He has caused two tents to be erected on the roof which will accommodate about twenty patients and there is still sufficient space for putting up tents for ten additional patients. A bathroom and a diet kitchen have also been established on the roof of the hospital.

VIRGINIA

Hospital Opened.—The New King's Daughters' Hospital at Portsmith was formally opened, September 10.

Personal.—Dr. Edward E. Feild, Norfolk, has returned from abroad.——Dr. Powhatan S. Chenk has received a strong endorsement from the Norfolk Medical Association for renomination as health commissioner of the State.

To Study State Hospitals.—Dr. Henry W. Dew, Lynchburg, a member of the State Epileptic Board and V. S. Stevenson, Toano, chairman of the board of Eastern State Hospital, Williamsburg, have been commissioned by the General State Hospital Board to make a tour of inspection of state hospitals in New York, New Jersey, Pennsylvania, Indiana, Illinois and Ohio, making a report of their observations to the general board, on their return.

Bacteriologist Wanted.—The board of health of Richmond desires a man to fill the position of city bacteriologist at a salary of $2,000 a year, to fill the vacancy caused by the resignation of Aubrey H. Straus who became a member of the faculty of the Medical College of Virginia.

New Society Organized.—Physicians of Dinwiddie County and Petersburg met in Petersburg September 15, organized the Dinwiddie County Medical Society, a component part of the Medical Society of Virginia, and elected the following officers: president, Dr. William C. Powell, Petersburg; vice-president, Dr. Edward W. Perkins, Reams; secretary, Dr. Leverette S. Early, Petersburg; and treasurer, Dr. Charles S. Dodd, Petersburg.

GENERAL

Congress Postponed.—The meeting of the Fourth International Congress on Home Education and the eighth annual meeting of the American School Hygiene Association, scheduled to be held in Philadelphia the last week in September, have been postponed on account of war conditions abroad. The next meeting of the American School Hygiene Association will be held early in 1915.

Ophthalmologists to Meet.—The nineteenth annual meeting of the American Academy of Ophthalmology and Otolaryngology will be held in Boston, October 19 to 21, with headquarters at the Hotel Copley-Plaza, under the presidency of Dr. James M. Ray, Louisville, Ky. Prof. Harvey Cushing of Harvard Medical School will be the guest of honor of the academy and will deliver an oration on "Perimetric Deviations Associated with Pituitary Lesions."

Obstetricians and Gynecologists Meet.—The American Association of Obstetricians and Gynecologists held its twenty-seventh annual meeting at Buffalo, September 15 to 17, and elected the following officers: president, Dr. Charles L. Bonifield, Cincinnati; vice-presidents, Drs. Asa B. Davis, New York City, and K. I. Sanes, Pittsburgh; secretary, Dr. E. Gustav Zinke, Cincinnati (reelected); treasurer, Herman E. Hayd, Buffalo; and executive council, Drs. John W. Keefe, Providence, R. I.; Xavier O. Werder, Pittsburgh; Miles F. Porter, Fort Wayne, Ind.; Louis Frank, Louisville, Ky.; Charles N. Smith, Toledo, Ohio, and Hugo O. Pantzer, Indianapolis.

Plague in New Orleans.—Since the last report of bubonic plague published in THE JOURNAL for September 26, the following human cases have been found:

No. 26, Clernerice Alexander, colored female, 824 Burgundy street, age 40, who became sick September 21, with a right femoral bubo.

No. 27, John J. Vath, white male, baker, 1463 Bourbon street, became sick September 20 with septicemic type, and died September 22.

No. 28, Mrs. Schuler, white female, age 18, 910 Elysian Fields avenue, became sick September 21 with right femoral bubo.

One hundred and thirty-seven rodent cases were discovered up to September 24. For the week ended September 19, 89 vessels had been fumigated, and 3,785 freight cars inspected. Six freight cars were condemned, and 2,081 were rat-proofed, 8,852 rats were trapped. 5,712 rats were examined of 8,782 which were received at the laboratory. The total number of rats captured up to September 19 is 88,395, of which 74,307 have been examined.

Southern Health Exhibition.—In connection with the annual meeting of the American Public Health Association to be held in Jacksonville, Fla., November 30 to December 5, there will be held a Southern Health Exhibition from November 27 to December 6. Plans have been under way for the last six months for this exhibition and a large amount of material has been promised. The exhibition will include material covering a wide range of subjects pertaining to health conservation and will comprise the work of the state and municipal boards of health and private and semi-public organizations throughout the entire South. Such phases of health conservation work as rural sanitation, typhoid fever, hookworm, pellagra, malaria, school medical inspection, infant and child hygiene, midwifery, vital statistics, milk- and water-supplies, food and drug inspection, habit-forming drugs, insect carriage of disease, fly eradication, rat extermination, plague prevention and laboratory work, together with modern sanitary apparatus will be covered by this exhibition.

Missouri Valley Physicians Meet.—The Medical Society of the Missouri Valley held its twenty-seventh annual meeting at Colfax, Iowa, September 17 and 18, under the presidency of Dr. Flavel B. Tiffany, Kansas City. In addition to the papers presented by members of the society, a number of invited guests were present; among these were Dr. Robert H. Babcock, Chicago, who discussed the various forms of streptococcus and endocarditis, illustrated by specimens; Dr. Campbell P. Howard, Iowa City, who spoke on the diagnosis of mediastinal tumors; Dr. Julius P. Sedgwick, Minneapolis, who demonstrated the use of the Roentgen ray in the diagnosis of diseases of childhood and Dr. John W. Flinn, Prescott, Ariz., who spoke on the recent management of tuberculosis, the keynote being prolonged rest in an outdoor tent. The following officers were elected: president, Dr. Granville N. Ryan, Des Moines, Iowa; vice-presidents, Drs. Albert E. King, Blockton, Iowa, and Joseph C. Waterman, Burke, S. Dak.; secretary, Dr. Charles Wood Fassett, St. Joseph, Mo. (reelected); treasurer, Dr. Oliver C. Gebhart, St. Joseph, Mo. (reelected). The society will hold its spring meeting at Omaha, in March, 1915.

FOREIGN

Memorial to German Physicians.—A large marble bust of Friedrich v. Recklinghausen was recently unveiled in the garden of the University Institute of Pathology at Strasburg, of which he was the founder and where he made many of his important discoveries.——A memorial has just been erected in the grounds of the hospital at Munich in honor of Friedrich Bezold, professor of diseases of the ear from 1877 until his death in 1908.

The Riberi Prize.—The Academy of Medicine at Turin, Italy, calls attention anew to the large prize, $4,000, which it awards every five years for the best work or discovery in the field of the medical sciences in the interim. Competing articles must be received before Dec. 13, 1916. Published works or manuscripts can be entered in competition but they must be in Italian, French or Latin. For further particulars address the Segretario generale della R. Accademia di Medicina, 81 rue de Po, Turin, Italy.

CANADA

Hospital News.—A hospital is to be built at New Waterford, N. S., by the Dominion Coal Company. The cost is to be $70,000, and when built the hospital will be maintained by the town of New Waterford.——Kenora, Ontario, has made a grant of $2,000 to the Royal Jubilee Hospital and another of $1,000 to St. Joseph's Hospital, both of that town.——Medicine Hat General Hospital (Sask.) has fitted up a house adjoining the hospital as a tuberculosis annex.——In the Royal Victoria Hospital, Montreal, with a service of thirty beds in gynecology, in the last ten years, ninety-four cases of puerperal infection have been admitted; of these, twenty-nine died, a mortality of 30 per cent. During this period of ten years in the same service, 1,553 major operations were performed, with only thirty-seven deaths.

Personals.—Dr. A. Gordon Rice, Toronto, has been appointed divisional surgeon in Ontario for the Grand Trunk Railway, succeeding the late Dr. Bruce L. Riordan, whose partner he was for a number of years.——Colonel Carleton Jones, director-general of the Canadian medical military services, has gone with Canada's first contingent in command of the hospital and ambulance sections.——Dr. W. J. Cooke, Sudbury, Ont., who has been doing graduate work in a London, England, hospital, finding his services not wanted by the war office to whom he had offered them, has sailed on the *Muritania* as ship surgeon.——Dr. George W. Badgerow, dean of the Golden Square Hospital, London, England, has sailed for England after spending a month visiting his parents in Toronto.

The Canadian Medical Protective Association.—This organization started in Winnipeg in 1901 is proving to be a valuable factor in the prevention of irritating, foundationless suits for alleged malpractice in Canada. The annual report has just been issued and shows substantial assets amounting to bonds valued at $6,180, a first mortgage of $3,300, and a cash balance in the bank of about $1,000. The council's report for the year ending June 30, 1914, shows that one action was actually disposed of by judgment during the year. It was a case of alleged injury from vaccination which was ordered by the health officer of Hamilton during an epidemic in that city. The member of the association was employed by the medical officer of health to vaccinate the various employees in several large industrial establishments. The case was dismissed without trial, being of a frivolous nature. Another action hangs over a British Columbia member for two years but it is thought that it will be abandoned. Seven or eight other cases have occurred in which actions were threatened but not one proceeded with; and there are no outstanding claims against the Association. The association has practically put an end to frivolous

actions against members for the purpose of extorting a settlement in order to avoid publicity. Dr. Robert W. Powell, Ottawa, was reelected president, and Dr. J. Fenton Argue, Ottawa, reelected secretary-treasurer.

WAR NOTES

American Information on Red Cross Work.—There are 171 surgeons and nurses of the American Red Cross who have arrived in Europe for service in the war. Until further contributions are received a greater number cannot be maintained. Surgeons desiring to go should address their applications to the Medical Bureau of the American Red Cross, Washington, D. C., with such letters of reference as they may have. Young men, well recommended, who can stand the severe campaign will be selected.

Alcohol Forbidden in the German Army.—Strict orders were issued at the time of the mobilization of the army that no one should offer or sell to any of the troops any alcoholic drink. The sale of liquor of any kind at the stations was forbidden. A Munich exchange remarks that in 1870 floods of beer were offered to the troops passing through the city on their way to the front and discipline suffered thereby in many instances; the present orderly mobilization, it adds, shows a marked contrast in this respect.

Treatment of Sore Feet.—The British Red Cross Association has issued a leaflet giving directions for the prevention and treatment of sore feet in troops:

1. Feet should be washed with soap and water, and very gently dried—not rubbed.
2. Dab with methylated spirit on cotton wool, except where the skin is broken.
3. When dry, dust with powder composed of equal parts of starch and boracic powder or fuller's earth.
4. Bandage with clean bandage, preferably of domette, not too light—or else put on clean socks. All dirty socks should be washed and dried before use.
5. Reddened skin or recent blisters should be protected by strips of strapping.
6. All corns should be protected by strapping. Open sores require surgical advice, and this should be sought whenever possible, especially if the surrounding redness of the foot is extending.
7. Toenails should be cut short.
8. Hard boots should be well greased—mutton fat is the best. They should be well dusted inside with starch and boracic powder.

Scarcity of Drugs in England.—The *Lancet* states that already the scarcity of foreign manufactured drugs is being noticed in England. Although no instances appear to be reported as yet of the inability to procure small quantities of commonly prescribed German products, the scarcity in the central market must in course of time result in pharmacists being unable to replenish their depleted stocks. Acetylsalicylic acid is about five times the value quoted before the war, and most other coal-tar products have advanced seriously in price. Chloral hydrate has trebled in value, cocain has doubled; and the salicylates are also much higher. Some British firms have already begun the manufacture of chemical products previously obtained from Germany. It is understood, the *Lancet* states, that an English house is prepared to manufacture the organic compounds of arsenic. The effect of the war is not felt solely in manufactured products as many of the most important vegetable drugs are produced in Belgium, Germany and France; and the new crops: chamomile, arnica, belladonna, digitalis, gentian, colchicum and others were awaiting harvest when the call to arms removed laborers from the fields.

Staff and Equipment of Red Cross Vessel.—The ship "Red Cross" concerning which previous information has been offered, has sailed. Among its equipment were included 3,500 bales of absorbent and bleached cotton, 389,000 yards of gauze, 15,000 pounds of bandages, about 2,000 gallons of chloroform and ether, 10,000 stretchers; and a large quantity of other surgical supplies.

On the Greek ship, which sailed from New York September 9 for Salonica, Greece, was a hospital unit destined for Nish, Servia, which also carried many supplies.

The ten units aboard the "Red Cross" will be distributed among England, France, Belgium, Germany, Austria and Russia. The following is a schedule of the various units with brief biographies of the men composing them:

Unit "A" Director—Dr. Reynold M. Kirby-Smith, Health officer of Sewanee, Tenn., and former captain in the Medical Corps, U. S. Army. A graduate of the University of the South at Sewanee, in 1895. His first assistant will be Dr. John A. C. Colston, a member of the surgical staff of Johns Hopkins Hospital; and a graduate of Johns Hopkins University in 1911. His second assistant will be Dr. M. H. Todd, a graduate of Johns Hopkins University in 1913, formerly member surgical staff of Johns Hopkins Hospital.

Unit "B" Director—Dr. Roades Fayerweather. He is an instructor in orthopedic surgery at Johns Hopkins Hospital, and graduated from the medical school in 1913. His first assistant will be Dr. Lewis C. Spencer, assistant resident surgeon in Johns Hopkins Hospital. His second assistant will be Dr. H. R. Slack, who graduated from the Johns Hopkins Medical School in 1912, and has since served on the surgical staff of the hospital.

Unit "C".—The director of this unit is Dr. William S. Magill, a graduate of the Université de Paris in 1894 and a member of the Medical Reserve Corps, U. S. A. His assistants are Dr. Philip Newton, Washington, D. C., a graduate of the Georgetown Medical School, 1910, and assistant professor of anatomy; and Dr. Paul H. Zinkhan, a graduate of the same medical college.

Unit "D".—The director is Dr. Robert W. Hinds of Buffalo, N. Y., a graduate of Harvard University in 1910, and a member of the medical corps of the national guard of New York. His assistants are Dr. Fred W. Eastman, a graduate of Columbia University, and surgical intern of the Harlem Hospital; and Dr. Henry M. Shaw, graduate of the Johns Hopkins Medical School, and intern in the hospital.

Unit "E".—The director of Unit "E" is Dr. Charles MacDonald of Salem, N. J., a graduate of Columbia University, and house surgeon of St. Johns Hospital, New York City. His first assistant, Dr. Russell A. Jewitt, of Cleveland, O., is a graduate of Western Reserve Medical School, and his second assistant, Dr. John C. Miller of Shenandoah, Pa., is graduate of Jefferson Medical College at Philadelphia, with five years' medical experience.

Unit "F".—The director, Dr. Howard W. Beal, Worcester, Mass., is a graduate of the Harvard Medical School in 1898. He formerly held a commission in the medical corps of the army, which he resigned in 1903. His assistants are Dr. V. N. Leonard, a graduate of Yale, and of the Johns Hopkins Medical School in 1911, and Dr. William T. Fitsimmons, graduate of Kansas State University, and Resident Surgeon of Roosevelt Hospital, New York City. As director of Unit "G" Dr. Bial F. Bradbury, of Norway, Me., was selected. He is a graduate of the Southern Medical College of Atlanta, Ga., in 1882, and has been for the past twenty-six years in the national guard of the state, occupying a position of chief surgeon with the rank of lieutenant-colonel. His first assistant, Dr. R. H. Newman, Knoxville, Tenn., is a graduate of the University of Louisville, and surgeon for the Louisville & Nashville R. R. and the Southern R. R., and captain of the medical corps, N. G., of Tennessee. His second assistant, Dr. John Lancer, is a graduate of Columbia University Medical School in 1905, with surgical experience as intern in the St. Francis Hospital, the New York Lying-In Hospital; also pediatrician at the Fordham University Clinic, New York.

Unit "H".—Dr. Edward H. Egbert, Washington, D. C., is director of this unit. He is a graduate of Dartmouth Medical School, and Baltimore Medical College in 1903. His assistants are Dr. Brown S. McClintic, Peru, Ind., and Dr. Arthur M. Zinkhan, Washington, D. C.

Unit "I".—Dr. Charles H. Sanders, a graduate of Georgetown University Medical School has been selected as director of this unit. His assistants are Dr. J. F. Spearman, graduate of the College of Physicians and Surgeons of Baltimore; Dr. Grover A. C. Stem, Washington, D. C.

Unit "K".—Dr. Cary A. Snoddy is director; his assistants are Dr. Fred G. Benton, New York City; and Dr. Walcott Denison, graduate of Washington University, St. Louis, Mo.

In the "Servian Unit" the director is Dr. Edward W. Ryan, who has served for the past two years with the American and Mexican Red Cross Societies. His assistants are Drs. James C. Donovan and William P. Ahern, all are graduates of Fordham University Medical School, New York.

LONDON LETTER

London, Sept. 16, 1914.

The War

A scheme has been devised whereby free medical attendance with medicine and appliances will be provided dependents of soldiers and sailors serving with the colors who need relief. The scheme originated in a proposal made by the British Medical Association and the Pharmaceutical Society. They offered to the government the cooperation of their professions for providing these dependents with free medical attendance and medicines and appliances at cost. The executive committee of the Prince of Wales' Fund (a fund now amounting to over $100,000 subscribed in response to an appeal by the prince for the relief of distress consequent on the war) has decided to defray the cost of medicines and appliances. On the initiative of the British Medical Association physicians throughout the country have agreed to undertake the work of those who have abandoned their practices for military service and to conserve them until their return. These are only examples of the general spirit of patriotism evoked in all classes by this titanic struggle. Elaborate arrangements have been made by the admiralty for dealing with sick and wounded from the fleet. They are adapted to meet the emergency of a general action and also the needs of single vessels which may suffer in minor engagements. The British navy has eight hospital ships, of which five are in home waters. Their duty will be to collect the wounded from any general action. They carry a full complement of medical officers and dressers. They will convey the wounded to the large naval hospitals where the staff of medical officers is reinforced by civilian consultants. Should any pressure arise in the hospitals, convalescents will be transferred as quickly as possible to homes or inland hospitals.

Sir William Osler on Military Hygiene

Addressing officers and men in a military camp on the prevention of disease in active service, Sir William Osler remarked that formerly it had been said that an army marched on its belly; now it marched on its brains. Only by utilizing fully existing knowledge in all grades, from the commander-in-chief to private, was the maximum success obtainable. Bacilli were a more important enemy than bullets. In the South African War the former were responsible for 14,000 deaths, the latter for only 8,000. So far only one great war had been waged with the weapons of science against these unseen foes. The Japanese went into the Russian campaign prepared as fully against bacilli as bullets, and their percentage of deaths from disease was the lowest recorded. We were not likely to have to fight three of the greatest scourges of armies—typhus, malaria and cholera, though the possibility of the last had to be considered. But there remained dysentery, pneumonia and typhoid. Dysentery could be prevented only by boiling water. Pneumonia was much more difficult to prevent. Coughs and colds should not be neglected. The exhaustion produced by long marches, by exposure to wet and cold, and by wounds lowered the resistance of the body so that the pneumococci could attack the lungs. Above all others typhoid was the most fatal disease in modern warfare. Over and over again it had killed thousands before they reached the fighting line. In the South African War it killed more than the bullets of the Boers. Osler advised his hearers to take advantage of inoculation to protect them against this disease. In the British army, unlike foreign ones, inoculation is voluntary.

PARIS LETTER

(Delayed in transmission)

PARIS, Sept. 17, 1914.

The Census and Provisioning of Paris

At this writing the German Army, which a few days ago was still threatening Paris, has withdrawn considerably. Notwithstanding, the military authorities, in whose hands all powers have been concentrated since the very beginning of the war, has judged it prudent to count the present population in preparation for a possible siege of Paris and of the placing of the population on rations which might be made necessary by blockade. It is interesting to note that in the questionnaire addressed to each household is a special inquiry with regard to persons requiring a special diet, that is, infants under 15 months of age and invalids requiring certain foods.

The results of the census indicate that the number of households in the city is about 887,267, representing 2,006,786 persons. In 1911 the figures for the quinquennial census were about 1,123,634 households, or about 2,833,351 persons. There has thus been a diminution of about 30 per cent., and this decrease has continued, for there have been a number of departures recently. Under these conditions, it may be seen that Paris can be provisioned without great difficulty. Up to the present the capital has not had to suffer in this respect. Even as to milk, neither children nor invalids have at any time been deprived of this necessary food, and the supply has always been sufficient so that even adults can use the amount of milk to which they have been accustomed. Still, just now, the military operations going on in several dairy regions render commercial traffic very difficult when they come near the city. In spite of the sudden changes of railroad timetables, necessitated by army movements, however, and in spite of the necessity for relegating to the second place everything which is not directly connected with measures of national defense, the milk-dealers appear to be able to supply the needs of the population of Paris. The milk, though it arrives later than under ordinary circumstances and at very irregular intervals, is received in sufficient quantity. In view of the delay in delivery, the dealers recommend their customers to boil each evening all the milk which they may need to use next day before the arrival of the next supply.

The War and University Life

The council of the Université de Paris has just met under the presidency of M. Liard, vice-rector of the Académie de Paris. It has taken measures for the opening examinations in October and for the resumption of lectures in the various departments of the university the beginning of November.

The War and Public Hygiene

The prefect of the Seine has just posted on the walls of Paris large notices enjoining on the owners of buildings the measures of cleanliness and hygiene necessary to protect the public health, such as the emptying of cess-pools, the removal of rubbish, the burning of refuse, the cleanliness of courts and stairways, the emptying of stagnant water, etc.

It is regrettable indeed that under such serious circumstances as the present, unscrupulous persons do not hesitate to exploit public credulity by their brazen advertisements. Thus, everywhere among the official notices are seen small posters headed "Public Hygiene" and as a subheading "To Avoid Epidemics." The poster begins by recommending a series of precautions having to do with personal cleanliness, avoidance of alcoholic excesses, etc. Then comes the following advice: "Drink only water in which has been dissolved a packet of LITHINES of Dr. X. . . . Water thus prepared is a healthful, economical and slightly effervescent mineral water. . . ."

The Mustering into the Army of Men who Have Regained Their Health After Being Invalided Out

M. Millerand, minister of War, has just addressed to the president of the republic a report on the subject of exemptions from military service. According to the present regulations, former soldiers who have been invalided out are definitely released from all military obligations, whatever their age or state of health. It is the same with regard to young men who have been exempted from military service by examining boards. Statistics show that the number of young Frenchmen who are thus lost to the national defense is considerable, taking into account the whole country. While some of them are really unfit for armed service, the physical condition of others has improved since they were examined and dismissed or exempted from service. Not to take into account at the present crisis those who are now fit for service would be negligent in the extreme. A law passed last year requires young men exempted from service to present themselves for examination (1) at the time when they would pass into the reserve of the active army (at the age of 24); (2) five years afterward; (3) at the time when they should pass into the territorial army (at the age of 34). Those who at any one of these examinations seem fit for military service are immediately subject to the obligations of the class to which they belong by age. Carrying out this idea, the minister of war has required all exempted and invalided men to undergo medical examination. It is to be presumed that many of them will be found capable of taking part in the defense of the country.

BERLIN LETTER

(Delayed in transmission)

BERLIN, Sept. 5, 1914.

The War

Among the efforts for mutual aid which are being carried on by physicians may be mentioned the lectures on military medicine. Such lectures have been held especially in Berlin under the auspices of the medical department of the army. One of the most notable was given by Wassermann, who even before the war bore the title of general staff surgeon. He spoke on the combating of epidemics in time of war. The general importance of this address justifies a somewhat extensive reproduction.

PROPHYLAXIS OF EPIDEMICS

In view of the probability of the introduction of plague, small-pox, cholera, epidemic typhus, and dysentery from Russia and of the fact that typhoid is epidemic on the eastern frontier of France and in Belgium, special precautionary measures have been taken. The army is accompanied by consulting hygienists from the ranks of our best university instructors and by a whole staff of bacteriologically trained army surgeons. Moreover, the base hospitals have portable bacteriologic laboratories and there are also available for investigations the Berlin Institute for Infectious Diseases, the laboratory of the Kaiser Wilhelm Academy and the Imperial Health Office. The most important thing in controlling an epidemic is the discovery of early cases, not only persons who are clinically sick, but more especially the so-called germ carriers. These are the most dangerous because they are not confined to bed and may infect their environment. They must be kept under constant bacteriologic supervision as also the sick that are received from Belgium and France, who, although they have been vaccinated against typhoid, may still be germ carriers.

In western Germany our population has been made nearly free from contagious diseases through the organized anti-typhoid campaign with the aid of the institutions at Celsen-

kirchen and Saarbrücken. However, should typhoid appear in the army from contact with the French, the patients must not be sent to the rear but must be isolated. The isolation rooms in the hospitals must be protected with gauze or wire netting at the windows from the access of flies and mosquitoes, as experience has shown that these are likely to convey disease germs to foodstuffs. The same care must be used in regard to the latrines, and no stagnant water must be permitted in the neighborhood of the hospital. If the pools cannot be drained they should be sprayed with crude petroleum. Especial care must be taken of drinking water, and the so-called good spring water should be strenuously avoided and only deep water obtained through a well, or boiled water should be used. If necessary, water should be sterilized by the sterilizing apparatus which is carried with the troop. In the same way supervision of the help and cooks, especially the women, should be exercised as epidemics have been known to arise from bacilli carriers, even from women potato-peelers, although they were not sick. The sterilization should be carried out by steam, or chemical disinfectants, of which a soap-cresol solution is most to be recommended. This can be prepared extemporaneously by mixing with 950 c.c. of hot water, 25 gm. of soft potassium soap and 25 gm. of a 10 per cent. solution of crude phenol (carbolic acid). Milk of lime is to be recommended for the same purpose.

VACCINATION AGAINST TYPHOID AND CHOLERA

In addition to these measures, protective vaccination is to be recommended in threatened typhoid and in cholera, and this should be done in all troops which enter a marshy region. Typhoid vaccination should be made in the neighborhood of the clavicle, never in the arm or the back, lest the use of the gun be interfered with, or the soldier cannot lie down comfortably, for typhoid vaccination sometimes produces severe reactions. For this reason it is preferable to make the injection near evening. Five-tenths c.c. is first injected and after seven days 1 c.c., and if necessary a third injection is made. Naturally nurses should also be injected. In cholera at least two injections should be made, beginning with 0.5 c.c. and after six days 1 c.c. The reaction is slighter than with typhoid. In dysentery the feces and blood should be examined to determine the nature of the disease.

PLAGUE, TYPHUS, RELAPSING FEVER AND MENINGITIS

Plague requires the greatest care, the pneumonic form being the most dangerous, the bubonic form less menacing. In every case of pneumonia, pulmonary plague should be borne in mind, for the course of this disease in the first few days is just like that of pneumonia. Cases of typhus should be isolated and the barracks placed at a distance from the rest of the hospital. The windows and doors must be kept open night and day, winter or summer, as it is only by diluting the unknown virus with fresh air that physicians and nurses can escape cantagion. If this precaution is neglected, infection is inevitable. Relapsing fever is efficiently treated with salvarsan, and cerebrospinal meningitis with the antimeningitic serum.

Health of Troops at the Front

Reports from the firing line show that our surgeons have been on duty with the same unremitting activity as our soldiers, as is easy to understand. According to a communication from a young colleague, he has in the last few days at times been in the saddle for thirteen hours and then worked for the same length of time in the hospital. The health of our troops is characterized as good by an official report of the chief of the medical service in the field. So far no epidemics have arisen. To be sure, a part of our troops are in a hostile country which has not enjoyed the same hygienic advantages as our home country, and whose inhabitants are many of them carriers of the germs of infection, but the extensive foresight of the German military organization is effective against even these obstacles. Vaccination has been strictly enforced and if necessary will be carried out among the hostile inhabitants. Apparatus for examinations for typhoid, cholera and dysentery, and vaccination material are carried with the army. Expert hygienists are found in the ranks of our army surgeons. In our own country there is no notable increase of infectious diseases. In this respect the prisoners of war are carefully watched. The wounds received in the regular course of war show a good tendency toward healing. The German first treatment, especially the German first-aid bandage, are showing good results. The bandages applied at the front remained in good position during the transportation to the rear.

Marriages

Ellen Bradford Murray, M.D., Ypsilanti, Mich., and Edward F. Brown of Marlboro, Mass., September 19.

Paul Guthrie Moore, M.D., Cleveland, Ohio, to Miss Henrietta Louise Mallory of Sarnia, Ont., September 16.

Aaron C. Conaway, M.D., Marshalltown, Iowa, to Miss Rhea Ireland Butler of Chicago, September 26.

John Quincy Newell, M.D., Jennings, Okla., to Mrs. Bacon of Oklahoma City, Okla., September 10.

Charles Judson Brunson, M.D., Adamson, Okla., to Mrs. Emily J. Reese, McAlester, Okla., recently.

Vincent J. Mulvehill, M.D., Carrolltown, Pa., to Miss Delrose Williams of Altoona, Pa., recently.

Charles H. MacPherson, M.D., to Miss Lora Frances Anderson, both of Modesto, Ill., recently.

Hada M. Burkhart, M.D., Rock Island, Ill., and Martin R. Carlson of Moline, Ill., September 17.

Lawrence Tyler Post, M.D., Baltimore, Md., to Miss Helen Sharp of Cranford, N. J., September 7.

Louis George Hoffman, M.D., to Miss Cora Hazel Bryan, both of Chicago, September 15.

Cleo Earl Weaver, M.D., to Miss Pearl Hendry, both of LaBelle, Fla., September 15.

Deaths

John Lanson Adams, M.D. College of Physicians and Surgeons in the City of New York, 1886; a Fellow of the American Medical Association; a member of the American Laryngological, Rhinological and Otological Society, American Ophthalmological Society, American Otological and New York Otological Society; attending surgeon to the New York Eye and Ear Infirmary, Bloomingdale Clinic and West Side German Dispensary, consulting ophthalmologist and otologist to the New York Hospital, Lying-in Asylum, Manhattan State Hospital and New York Nose, Throat and Lung Hospital; one of the most prominent specialists on diseases of the eye, ear, nose and throat of the United States; was instantly killed, September 25, by an accidental fall from a fourth-story window of his house in New York City, aged 54.

John C. Fleming, M.D. Jefferson Medical College, 1871; a member of the staff of the Mercy Hospital, Burlington, Ia.; formerly city health officer and city physician of Burlington, physician of Des Moines County and local surgeon for the Burlington System, died suddenly from cerebral hemorrhage, while making a professional call in that city, September 15, aged 65.

Ernest Saxl, M.D. K. K. Deutsche Karl-Ferdinand-Universität, Prague, Bohemia, 1893; a Fellow of the American Medical Association; professor of clinical ophthalmology in the American Medical College, St. Louis; a well-known oculist and musical expert of St. Louis; died in his apartment in that city, September 11, from hemorrhage of the lungs, aged 36.

John Andrew O'Keefe, M.D. Long Island College Hospital, Brooklyn, 1884; a Fellow of the American Medical Association; medical examiner of Providence County, R. I., and for twenty years a medical officer of the Rhode Island Militia; died suddenly in his office in Providence, September 14, from heart disease, aged 51.

Walter Frederick McCabe, M.D. College of Physicians and Surgeons in the City of New York, 1895; a member of the Minnesota State Medical Association and well known as a roentgenologist of Duluth; died at his home in that city, September 11, from long-standing disease of the spinal cord, aged 50.

Edward Tyler Doty, M.D. University of Michigan, Ann Arbor, 1870; a member of the Missouri State Medical Association and once president of the Joplin and Jasper County medical societies; a veteran of the Civil War; died at his home in Anderson, Mo., September 13, from gastritis, aged 70.

Bernard E. McShane, M.D. College of Physicians and Surgeons, Chicago, 1895; a member of the Kansas Medical Society and a practitioner of Alton, Kans.; but later a resident of Riverside, Cal.; died at the home of his sister in Milwaukee, Wis., September 18, aged 43.

John McGraw Woodbury, M.D. Bellevue Hospital Medical College, New York City, 1881; under two administrations, street cleaning commissioner of New York City; physician and surgeon, sanitary inspector and organizer of the first board of health of Ponce, Porto Rico during the Spanish-American War in which he served on the staff of Major General James H. Wilson; died at his home in Southampton, Long Island, N. Y., September 24.

John Hess Burkett, M.D. Miami Medical College, Cincinnati, 1871; a member of the Medical Society of the State of Pennsylvania and for many years president of the Robinson Township, Allegheny County, Pa., school board, township auditor and justice of the peace; died at his home near Carnegie, Pa., September 16, aged 74.

Robert Brown Johnson, M.D. Medical College of the State of South Carolina, Charleston, 1847; a Confederate veteran; for nearly half a century a practitioner of Mississippi and since 1900 a resident of Kosciusko, Miss.; died in a hospital in Camden, S. C., September 3, aged 89.

Adolphus G. Wood, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1859; at one time postmaster of Walkersville, Mo.; president of the National Bank of Lentner, Mo.; and a prominent practitioner and citizen of that place; died at his home, September 6, aged 83.

Archibald Dann, M.D. University of Pennsylvania, Philadelphia, 1866; formerly a member of the staff of the Rochester General Hospital and of the consulting staff of the Rochester State Hospital; died at his home in Rochester, N. Y., September 6, aged 69.

Edwin Kindle Williams, M.D. College of Physicians and Surgeons, Baltimore, Md., 1883; a member and once first vice-president of the Arkansas Medical Society; died at his home in Arkadelphia, Ark., September 11, from pneumonia, aged 50.

George W. Robb, M.D. Detroit College of Medicine and Surgery, Detroit, Mich., 1894; a Fellow of the American Medical Association; died at his home in Flushing, Mich., September 14, from pernicious anemia, aged 58.

Albert E. Brandt, M.D. Pulte Medical College, Cincinnati, 1878; of Harrisburg, Pa.; a veteran of the Civil War; died at the home of his granddaughter in Mechanicsburg, Pa., September 7, from heart disease, aged 78.

Ashael H. Alderman, M.D. National Homeopathic Medical College, Washington, D. C., 1895; a veteran of the Civil War; died at his home in Washington, D. C., September 13, from heart disease, aged 71.

Stephen Henry Hussey, M.D. Medical College of Ohio, Cincinnati, 1887; formerly of Bowersville, Ohio; was found dead in his room in the Lexington Hotel, Chicago, September 15, from heart disease, aged 63.

John C. Barker, M.D. University of Louisville, Ky., 1893; a member of the Kentucky State Medical Association; died at his home in Hustonville, Ky., September 10, from nephritis.

John Eaton Burris, M.D. Eclectic Medical College of the City of New York, 1876; a veteran of the Civil War; died at his home in New York City, September 10, aged 68.

John T. Nolan, M.D. Jefferson Medical College, 1908; since 1912 a medical inspector of the city schools of Philadelphia; died at his home in that city, August 27, aged 28.

Arrillis Irving Griffith, M.D. Kentucky School of Medicine, Louisville, 1881; formerly of Stoutsville, Mo.; died at his home in Toledo, Ohio, September 3, aged 71.

Samuel T. Rawlins, M.D. Cincinnati College of Medicine and Surgery; 1873; a Confederate veteran; died at his home in Georgetown, Ky., September 4, aged 73.

Eugene Nesbit Freeman, M.D. Vanderbilt University, Nashville, Tenn., 1885; of Grafton, Cal; died at Knights' Landing, Cal., August 22, aged 53.

John Harry Lane, M.D. Washington University, St. Louis, 1876; died at his home in Medora, Ill., September 7, from heart disease, aged 70.

John W. Hogg, M.D. Medical College of Georgia, Augusta, 1877; was found dead in bed at his home in Senoia, Ga., September 8, aged 62.

August B. Bunsen, M.D. University of Heidelberg, Germany, 1853; died at his home in Freeport, Ill., September 3, aged 84.

Fred Henry Huning, M.D. Bellevue Hospital Medical College, 1896; died at his home in Ventura, Cal., June 27, aged 43.

William N. Brickey (license Arkansas, 1903) died at his home in Little Rock, Ark., August 31, aged 60.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

G. H. BRINKLER—"FOOD EXPERT" *

A Quack Against Whom the Federal Authorities have Issued a Post-Office Fraud Order

G. H. Brinkler of Washington, D. C., has for some time been advertising as a "food expert" and "food specialist." His business was conducted on the mail-order plan. He sold no foods but purported to sell expert advice on dieting. In effect, Brinkler pretended to treat and cure any disease by prescribing a particular diet for the individual suffering from that disease.

Brinkler is neither a physician, a pharmacist nor a chemist yet, until the federal authorities put him out of business, he obtained money from people for opinions that he expressed on medicine, pharmacy and chemistry. Brinkler, as a quack, sold worthless advice instead of drugs. In the hearings before the Committee on Interstate and Foreign Commerce, Dr. L. F. Kebler, Chief of the Division of Drugs of the Bureau of Chemistry, U. S. Department of Agriculture, referred to the fraudulent business carried on by G. H. Brinkler. Dr. Kebler said:

"Through published advertisements and otherwise this party enters into correspondence with the sick and the well and by specious promises induces them to purchase letters of advice pertaining to diet. He represents that the advice given in these letters, if followed, will effect a cure of all diseases, including cancer, Bright's disease, diabetes, etc., and that it will bring about and maintain a permanent state of good health."

Dr. Kebler, after quoting a number of extracts from Brinkler's "literature" to illustrate the nature of the claims made by this quack, continued:

"No one acquainted with the disease or diseased conditions involved would make such representations. According to his own statement, Mr. Brinkler, the promoter of this scheme, is neither a physician, a pharmacist nor a chemist. It would, therefore, appear that these claims and representations are made for the purpose of misleading and deceiving the public."

BUTTER THE CAUSE OF DEAFNESS!

Brinkler's advertisements were usually headed "Popular Educational Food Campaign," and were so arranged as to give the impression that Brinkler himself was connected with some department of the government. His claims and statements indicate that the fraudulence of his operations was exceeded only by his ignorance of the subject in which he professed to be a specialist. According to Brinkler, certain foods cause tumors, cough and "catarrh"; too much cream, butter and cheese may produce deafness and discharging ears; some foods "make one Nervous, Shy and Low-Spirited," others produce "the finest quality of Vitality, Electricity, Magnetism or Intelligence."

In his advertising, Brinkler urged that ten cents be sent for his "valuable instructive booklet" entitled, "The New Brainy Diet System." The inference was that this booklet would give valuable advice on diet; as a matter of fact, it was merely an advertising pamphlet devoted to the further exploitation of Brinkler and his alleged system. A large part of the pamphlet consisted of testimonials of the usual type, and those familiar with the literature of quackery will not be surprised to learn that one of the testimonials was from Willard H. Morse, M.D., F.S.Sc. (Lond.), that prolific producer of fake analyses and worthless testimonials. It

* This article gives in an abbreviated form the Government's case against Brinkler. The matter will be reprinted in pamphlet form (price 4 cents) in greater detail.

appeared in the form of a "report" to the "Society of Science, Letters and Arts of London"—a "society" to which many quacks belong, the "fellowship" costing only one guinea ($5.00). "Fellows" of the "society," may append the letters "F.S.Sc. (Lond.)" to their names, and this makes a valuable advertising asset with which to impress the ignorant.

In addition to testimonials, Brinkler employed the tactics common to quacks, especially that of attempting to frighten his prospective victims. "REMEMBER MY ADDRESS IN THE HOUR OF APPROACHING DEATH," he grewsomely suggested in large, black-faced type. Every booklet sent out by Brinkler contained a "Question List" blank. This was to be filled out by the recipient and sent back to Brinkler with $1.00. Those who sent the dollar with the filled-out blank received a letter stating that the various ailments described on the blank were due to improper diet. No advice was given, however, as to what constituted correct diet, but Brinkler stated that he would give advice regarding the correct diet to use in the case on the receipt of $40, $60 or $75, as the case might be.

·LIFE·

BRAINY

Popular Educational Food Campaign

Striking Effects of Different Foods

G. H. BRINKLER Food Expert

GENERAL CLASSIFICATION OF FOODS

VITAL OR BRAINY

MUSCLE

STIMULATING

SOLVENTS

BLOOD PURIFIERS OR LAXATIVES

SWEET ELEMENTS

To Increase or to Reduce Weight

A Few Opinions

Four booklets which have taught more TO CURE themselves

G. H. BRINKLER, Food Expert, Dept. 72F, Washington, D. C.

DIET

A typical advertisement of Quack Brinkler. The original occupied forty-four square inches.

THE GOVERNMENT PROTECTS THE PUBLIC

The investigation of Brinkler's fraudulent business by the government officials is interestingly described in the memorandum addressed to the Postmaster-General by the Solicitor of the Post-Office Department, Judge W. H. Lamar, and recommending the issuance of a fraud order against Brinkler. On May 22, 1914, Brinkler was called on to show cause on or before June 2, 1914, why a fraud order should not be issued against him. A continuance until June 15, 1914, was granted at the request of Brinkler's attorney, Nathan B. Williams of Washington, D. C. On that date, the hearing of the charges commenced and continued for ten days. Attorney Williams was assisted by Fred B. Rhodes, another Washington attorney, who acted as associate counsel for Brinkler. After the hearing, Brinkler was allowed three weeks in which to file a brief which, when filed, was supplemented later by an additional brief and further evidence. The Solicitor for the Post-Office Department reviewed all the evidence and papers in the case and reported the matter in part as follows:

"The business of Mr. Brinkler is conducted through, and by means of, the United States mails. His advertisements appear in a large number of magazines of general circulation, and are all substantially to the same effect."

A typical advertisement was then quoted and attention called to some of the phrases contained in it. The report continues:

"The use of the expressions 'Popular Educational Food Campaign,' 'Official Investigating Committee,' and 'Food Expert,' Dept. 21E, [the 'key number' of the advertisement] Washington, D. C.,' is calculated to lead the reader to believe that the advertiser is connected in some way with the government, and that many persons are induced to remit ten cents for the booklet advertised under this belief is shown by the evidence. The booklet entitled 'The New Brainy Diet System,' which is sent to those induced to remit ten cents to the advertiser, does not contain an exposition of the 'new brainy diet system,' or give the purchaser any practical advice on diet, as the advertisement would lead one to believe, but is made up of matter advertising the system and Brinkler's alleged knowledge and ability. It consists of 48 pages, 28 of which contain nothing but alleged extracts from testimonials."

SOME OF BRINKLER'S CLAIMS

Then followed many quotations from the booklet to show the character of the matter it contained. These are a few of the quotations:

"The many ills flesh is supposed to be 'heir to' are simply the result of malassimilation of food materials, causing rebellion of the organs of the body against overwork in some cases, and insufficient nourishment in others."

"The cure of disease, therefore, lies in correcting the lack of proportionality—restoring the balance—by rearranging the diet so that the unsuitable preponderating elements are reduced and the neglected necessary elements are increased."

"The severest cases of vitiated Blood Diseases, congested organs, any kind of cold, fever, or nervous complaint, etc., can be cured by a judiciously selected diet."

"GALL STONES are dissolved and expelled by correct foods without an operation."

"APPENDICITIS, which is the result of inflammatory conditions due to wrong foods, is permanently cured by proper foods, without an operation. Urgency instructions by wire when necessary."

"Coughing, expectoration, blood-spitting and night-sweats have been cured within a few weeks in some cases."

"CANCER, which is not a living thing as many suppose, but an accumulation of decomposed matter, the products of unassimilable waste elements which the excretory organs have failed to eliminate and which the person has been unable to turn into healthy tissue—is dissolved, dispersed and expelled downwards through the excretory organs by curative foods."

"DEVELOPING THE VOICE. There are special foods which will develop the voice when rightly combined and proportioned with other foods to suit the individual, according to the principles of the Brainy Diet System."

"ADULTS SHOULD LEARN HOW TO CONTROL THEIR SEXUALITY BY CORRECT FOODS IN DAILY USE."

"MARRIED WOMEN SHOULD LEARN HOW TO REGULATE THEIR FAMILIES BY CERTAIN FOODS IN DAILY USE."

The report then continues:

"The 'Official Investigating Committee' referred to in the advertisement and also in the booklet as having 'certified to each case' consists of a number of notaries public whom Mr. Brinkler employed for the purpose of going over the original testimonials and comparing them with the printed extracts therefrom, and the certification, it is admitted by the respondent, was not to the truth of the statement of the testimonials, but only to the fact that such extracts were correct copies of original letters."

SOME CASES

In investigating Brinkler's scheme, the post-office inspectors filled out six symptom-blanks and sent them, each with a dollar, to Brinkler for advice. One of these blanks was sent under the name "F. G. Harris" and described a number of more or less vague symptoms. Brinkler's reply to "Mr. Harris" consisted of a repetition of the symptoms given in the blank, followed by the statement that each condition was the result of improper diet. No suggestions were offered as to what constituted a correct diet in "Harris'" supposed case,

but Brinkler offered to "undertake" the "case" for $60—cash in advance. For this amount he promised to send three letters of advice. As the $60 was not sent, Brinkler sent a "follow-up" letter urging again that the money be forwarded, and stating that he was positive that the Brinkler "food system" would "cure your complaints."

Under the name "E. M. Richardson," a symptom-blank was filled out purporting to come from a man who complained of no particular ailment but who declared that he had involuntary emissions about once a month. "Mr. Richardson" was advised that these emissions were caused by improper diet and would be "completely cured on a digestible brainy diet." Brinkler offered to undertake this case "for $50, prepaid."

Another symptom-blank, in the name "Walter Hadsel," was filled out describing symptoms that might have been due to carcinoma of the stomach and which were sufficiently serious to call for prompt and definite action. "Hadsel" was told that his condition was due to improper diet and that Brinkler would take the case for $75, prepaid. Brinkler was "positive that our food system will . . . cure your complaints."

A well-developed case of diabetes in a boy of 15 was described in a symptom-blank filled out under the name "Hamil." "Miss Du Pont" was a supposititious victim who described symptoms that might have been present in a case of serious disease of the uterus. An alleged case of syphilis was described on still another symptom blank under the name "Simcoe." In all of these cases, Brinkler declared that the conditions were due to improper diet and offered to prescribe diets that would cure the complaints, on receipt of the amount demanded. Brinkler asked $75, prepaid, for the "cure" of the 15-year-old diabetic; "Miss Du Pont's" case, he offered to undertake for $50, while in the supposititious case of syphilis described under the name "Simcoe," Brinkler advised that "proper diet" would relieve this condition and offered to take the case for $75. In discussing these various cases, Judge Lamar reported:

"In each of the above tests it developed that the 'analysis and comments' on the case for which the $1 was paid consisted substantially of a statement that each symptom given by the remitter was caused by incorrect eating and could be relieved by following a course of diet prescribed by Mr. Brinkler. That this advice is given in response to all symptom blanks, no matter what symptoms are shown, was admitted by the respondents. In other words, the return made to the correspondent for his remittance is merely another advertisement of Mr. Brinkler's system. It is obvious, therefore, that the blank has no function if the course thereafter offered for sale by Mr. Brinkler is not purchased, other than to induce the correspondent to remit one dollar in the belief that he is to obtain therefor an analysis of his particular complaints and advice based thereon, when in fact the respondent intends only to reiterate the claims made for his system in the booklet with which the correspondent is already supplied and to quote a large fee for the practical advice which the correspondent was expected to receive for each remittance theretofore made by him."

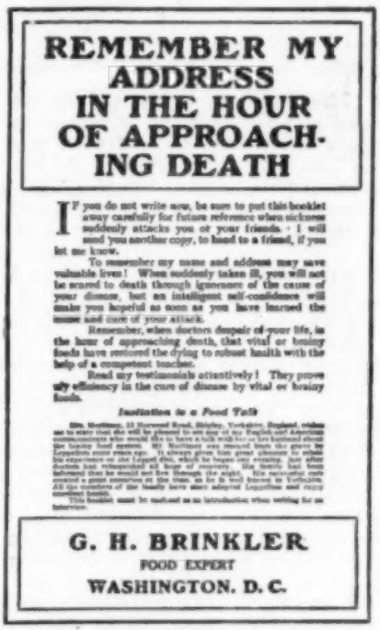
At Brinkler's hearing the Post-Office Department had the assistance of some well-known practicing physicians of Washington, D. C. Quoting further:

"These physicians were shown the symptom blanks sent to Mr. Brinkler by the inspectors and described above, and they agreed that the symptoms therein stated were common to a number of diseased conditions, and that it was impossible to tell from which of these conditions they arose in the cases in question. No evidence was offered by the respondent to controvert this testimony. These physicians testified further to the well-established fact that, as these different conditions required different treatment, in the absence of a diagnosis it was impossible to formulate a correct treatment or to tell whether improper food had caused, or a correct diet would relieve, the symptoms complained of. They also called attention to the fact that nightly emissions about once a month, referred to in several of the cases, were in fact no indication of disease at all, but a normal condition in a healthy man. They also stated that diabetes in a child of 15 was practically incurable and that syphilis was only amenable to drug treatment. The symptoms given in the 'Hadsel' case, they testified, might have arisen from cancer or ulcer of the stomach or a number of causes, and called for a most careful personal examination and treatment. Those given in the 'Du Pont' case would come from fibroid tumor, a polypus, a cancer or endometritis, necessitating also a most careful physical examination and perhaps an operation in order to save the patient's life.

"These doctors also testified that the extracts from the booklet quoted above were misleading and in many instances without foundation in fact whatsoever. This is obvious to any one who had the slightest knowledge of medical science. It is apparent from a consideration of these cases that the purchaser of Mr. Brinkler's treatment is not only defrauded of the purchase price, but is subjected to the risk of grave harm in the postponement of proper treatment until too late.

GIRL CLERKS PRESCRIBE TREATMENT

"The evidence shows that G. H. Brinkler is not a doctor and has had no education in medical subjects other than that obtained by the average man. Practically all his knowledge of dietetics has been obtained from reading a number of books on the subject and intercourse with others engaged in business similar to his own. He has in his employ a number of girls none of whom have any knowledge of the subject



REMEMBER MY ADDRESS IN THE HOUR OF APPROACHING DEATH

IF you do not write now, be sure to put this booklet away carefully for future reference when sickness suddenly attacks you or your friends. I will send you another copy, to hand to a friend, if you let me know.

To remember my name and address may save valuable lives! When suddenly taken ill, you will not be scared to death through ignorance of the cause of your disease, but an intelligent self-confidence will make you hopeful as soon as you have learned the cause and cure of your attack.

Remember, when doctors despair of your life, in the hour of approaching death, that vital or brainy foods have restored the dying to robust health with the help of a competent teacher.

Read my testimonials attentively! They prove my efficiency in the cure of disease by vital or brainy foods.

Institution to a Food Talk

G. H. BRINKLER
FOOD EXPERT
WASHINGTON, D. C.

Frightening the victim is a method classic to quackery. Here is a page (greatly reduced) from one of Brinkler's publications in which he attempts to play on the fears of the reader.

other than what he has told them. He has prepared a so-called 'model book' containing paragraphs applicable to a large number of symptoms. These paragraphs ascribe each symptom to improper food and state in substance that a proper diet will cure or relieve them. He has another 'model book' containing paragraphs prescribing a diet for the relief of all these symptoms, from which the letters sent when the course is purchased are made up. Unless a symptom not covered in these models is given, the correspondence is handled in an automatic way by the girl employees, one of them underlining the symptoms given and another specifying the paragraphs to be copied from the 'model book' in the reply, and so on. The same symptoms always elicit the same reply, regardless of the cause of the symptoms. Every case is accepted, no matter how serious the symptoms may be; and while it was testified that where the prospective said he had cancer, valvular heart trouble or any of a few other critical conditions, the paragraph to the effect that the correspondent 'is not paying for an experiment but a permanent cure' was omitted, yet, if a reply is not received in a short time, another letter goes out in which the sufferer is advised that Mr. Brinkler is positive that his 'food system will give you extra vitality and cure your complaints.'

"That wrong eating is a contributory cause in a great many diseases is unquestionable, but it is equally unquestionable that there are other factors; and to pretend to cure all diseases by the methods above described and with an utter ignorance of the cause of the symptoms and a disregard of all factors other than food and drink is to show a reckless disregard for the welfare of the public, and can only be ascribed to a deliberate intention to deceive and defraud. This is clear from the evidence in the case.

BRINKLER'S CALLOUS INDIFFERENCE

"There are a number of complaints in this case showing that many persons have been defrauded by the respondent. The callous indifference of the promoter of this business to the actual conditions of those induced to correspond with him is well shown in the complaint of Mrs. Norris Williams of Wilkes Barre, Pennsylvania, who was induced by the advertising matter of Mr. Brinkler to telegraph him as follows:

"'Urgent case; acute pulmonary consumption, four weeks, both lungs. 101 fever. Serious hemorrhage month ago. Slight cough. Patient in bed out of doors. Overgrown boy. Seventeen years, six feet. One hundred forty weight. Intellectual type, athletic clerk. Feeling distention after meals. Some constipation from milk and egg diet. Kidneys all right. Can afford $1.00 a day for food and get anything reasonably cooked. My husband died two months ago consumption so advise most reasonable price for treatment. Wire price collect immediately and I will telegraph money tomorrow. Letter follows.'

"Mr. Brinkler's reply was as follows:

"'Wire forty dollars for quick relief followed by complete course.'

"Thereupon Mrs. Williams wired $40 for the treatment referred to, and received in reply instructions as to what food should be given to the boy and what food should be withheld from him. Shortly thereafter the boy was taken to a sanatorium and died. Mr. Brinkler was informed of this and of the destitute circumstances in which the mother found herself, and urged to make a refund, which he declined to do.

TESTIMONIALS (OF COURSE) FOR DEFENSE

"Mr. Brinkler in his defense filed a large number of testimonials, in which the writers allege that they had been cured of a number of different diseases by his treatment, and also produced several witnesses who testified to the same effect. From the evidence in the case, however, I am satisfied either that the cure or relief reported was purely imaginary or that the purchaser of the treatment was deceived into ascribing to this system a recovery due in reality to natural causes, or was misled by temporary relief following a change of diet, or, if the sufferer was actually cured in any case it was necessarily the result of chance, the case being one in which the cause was actually a wrong diet and the diet prescribed being by good fortune a proper one for the case.

"Counsel for respondent have submitted a motion that the case be dismissed on a stipulation to the effect that hereafter Mr. Brinkler will confine himself to the sale of diets for various conditions and will not undertake to treat diseases through the mails. The circumstances of this case are such, however, that I believe the interests of the public can best be served by the issuance of a fraud order, and I therefore recommend that this motion be denied.

BRINKLER INDICTED

"Mr. Brinkler was, on August 7, indicted by the Federal Grand Jury, sitting at Washington, for using the mails in furtherance of a scheme to defraud, in the conduct of the business described herein, and is now held in the sum of $3,500 for trial.

"The postmaster at Washington reports that Mr. Brinkler receives on an average 252 pieces of mail a day.

"I find that this is a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, in violation of Sections 3929 and 4041 of the Revised Statutes, as amended, and therefore recommend that a fraud order be issued against G. H. Brinkler, at 1322 Rhode Island Avenue, Washington, D. C."

The fraud order was issued August 19, 1914.

Organic Differentiation.—Unity of internal structure combined with a great diversity of external forms is the great principle of organic differentiation.—Hugo de Vries, *Science.*

Correspondence

Kelling's Hemolytic Test

To the Editor:—It is difficult to criticize your editorials as they usually run, but I am surprised to find in THE JOURNAL, Sept. 5, 1914, p. 870, under the caption, "A New Serum Reaction for the Diagnosis of Gastric Carcinoma," an account of the Kelling hemolytic test.

Surely this cannot be a new test, for I have used it for about six years, and have applied the revised technic, using diluted serum and hen's corpuscles in 158 cases of suspected visceral malignant neoplasms and several hundred normal controls within the past two years. You state that further reports on the use of the serum test will be awaited with interest, yet the older technic was applied and reported by Weil, Blumgarten, Crile, Wittemore and others quite a few years ago. Furthermore, a couple of years ago I gave my opinion of the newer technic (diluted serums and alien corpuscles) in a lengthy article to the *Archives of Diagnosis*, October, 1912, which opinion I have not altered during my experience with the 158 cases since examined and checked by operation or subsequent history. In this article I also reviewed the literature to that date. Inasmuch as this has been published, and there have been no observations, so far as I know, tending to gainsay my conclusions, I see no reason to publish it again and thereby present it as a "further report."

You speak of the technic as simple. When properly set up with standard suspensions of hen's corpuscles, properly diluted serums, controls in plenty, with distilled waters, normal salts, various dilutions of normal serums and under strictly aseptic conditions, experience has shown me that the technic is tedious, to say the least, though, of course, less so than the complement-fixation test.

I am certain that all unfavorable reports from Americans are due to the fact that their technic has not been proper. Invariably, the men above mentioned used the older technic. Nor did they adhere strictly to this, some (especially Crile, Johnston, Canning) even going so far as to use the "reverse hemolysis" or destruction of corpuscles from suspected case with healthy serums. The work by Americans was usually stupid and entirely unfair to Kelling. So far as I know, I am the only man in this country who has applied and reported the new technic suggested by Kelling. So long as my results continue so pleasing as they have during the past two years, I shall use the test routinely in my work. Applied and interpreted as I suggested in the above-mentioned article, the test is quite specific.

There is one observation which I would like to note at this point. The hemolytic test cannot be applied to "mailed serums" and any degree of confidence placed in the results. The serum should be iced as soon as drawn and kept perfectly quiet until the test is set up.

In conclusion, the reaction is an old one. Both technics have been tried out by American laboratory workers and recorded in the literature, and are scarcely "simple" as regards their practical application.

B. G. R. WILLIAMS, M.D., Paris, Ill.

[COMMENT.—The title of Kelling's article is "*Blutserumuntersuchungen bei Karzinomatösen mit neuer verbesserte Methode*" (Study of the Blood-Serum in Carcinoma with New Improved Methods). The improvement consists in diluting the serum with 0.85 per cent. salt solution 1:10 and extending the time in the incubator (37 C.) to twenty-four, occasionally to forty hours. These changes, it would seem, make it quite proper to speak of the test as new. A complete review of all the hemolytic tests applied to carcinoma was not indicated. We still hold that further reports of results with Kelling's new method may be awaited with interest, because of the large number of positive results reported by him. Kelling also lays special stress on combining this test with search for occult blood in the feces. If both are positive, the diagnosis of carcinoma becomes highly probable.—ED.]

Insurance Companies and Fee Bills

To the Editor:—Since the passage of the employees' liability act physicians of Illinois are being flooded by the insurance companies with fee bills which they are requested to sign. These fee bills offer for many things a much lower price than we are accustomed to receiving. Insurance companies almost without exception do not pay the bills presented them without first asking for a reduction.

I wish to call the attention of the profession to the fact that in signing these fee bills they are simply signing away their right to charge a fair price for their services and *in return they get nothing, not even the promise of a single case,* for these fee bills are not sent to one physician in the community, but to many. The proper thing to do is not to sign these fee bills but to render bills in accordance with the established fee bill of the community.

G. W. BOOT, M.D., Evanston, Ill.

National Standard Requirement for Medical Practice

To the Editor:—Permit me to voice my approval of your recent editorial endorsing a national standard requirement for medical practice. The national medical board is a long felt want, and its establishment cannot come too soon.

ARTHUR I. BLAU, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

VACCINES, SEROBACTERINS AND LACTIC-ACID FERMENTS

To the Editor:—When the vaccine peddler visits me I wish not to appear rude to him. I try to give him a patient and respectful hearing. He seems to know all about pathology and gives me wonderfully helpful suggestions. He shows me testimonials from Dr. Tom and Dr. Dick and encouraging reports from Dr. Harry. These communications relate to experience with mixed vaccines in the treatment of "doubtful infections." I notice that most of these doubtful infections are classed as "rheumatism."

I have been reading and investigating some for the last fifteen years, and I do not like to have my line of vision bent through lenses fitted by these enthusiastic philanthropists. After some weeks of special search in the literature from disinterested sources, I find myself in a culdesac of uncertainty in regard to the use of vaccines. I found comfort in a Current Comment in THE JOURNAL, Jan. 25, 1913, under the title "The Reductio ad Absurdum of Vaccine Therapy." There is nothing pessimistic in the article, but rather the bringing down to earth of the man who entertains the wild notion that everybody should be vaccinated for every thing that might in the remote future attack him.

I wish to know in particular concerning the principle of sensitized vaccine as elaborated by Besredka during the last seven years. In an editorial in THE JOURNAL, Nov. 15, 1913, p. 1814, the use of the sensitized living bacteria as a means of combating infection in the human subject was discussed and condemned. Now certain dispensers of biologic products have begun to "put upon the market a piece of goods" for which they claim special merit. I refer to the "serobacterins" which differ from the preparation proposed by Besredka only in the one feature of non-viability of the bacteria contained in the commercial product. I should like to know about these serobacterins. There is a most excellent article on the subject of vaccine therapy by Dr. R. M. Pearce in THE JOURNAL, Dec. 13, 1913, p. 2115.

Another inquiry I wish to make is concerning the merits of the *Bacillus lactis bulgaricus.* I have noticed some rather convincing reports from various sources, notably in THE JOURNAL, July 19, 1913, p. 164, by Dr. Clock of New York. Please inform me if there is merit in the tablet of this bacillus. Tell me if the live culture in tubes is to be preferred in the "implantation method" of treating intestinal infections.

You are aware that the practician in the smaller towns is handicapped in that he is almost driven to the use of hand-me-down preparations sometimes, yet I am sure that we get some benefit from these stock vaccines and other biologic preparations if we study our patients and discriminate.

S. H. LANDRUM, M.D., Altus, Okla.

ANSWER.—The editorial cited as condemning the sensitized bacteria whose use is advocated by Besredka bases such condemnation on the supposition that these preparations have not given any results superior to those obtained by the vaccines consisting of dead bacteria which are now on the market. The objection to sensitized living bacteria is that there is always an uncertainty as to the action of living bacteria in the animal body. No danger from this source can be attributed to the serobacterins because they consist of dead bacteria and, so far as is known, can do no more harm than other dead bacteria. In fact, it is claimed that the serobacterins or sensitized dead bacteria are preferable to other vaccines because the toxic products of the bacteria other than the immunizing property have been largely removed. With regard to these preparations it must be said that they are still on trial. Whether or not they will prove superior to the ordinary vaccines remains to be decided in great part by careful clinical observation.

In the last paragraph, Dr. Landrum has struck the keynote of the proper use of biologic preparations. Stock vaccines can do no harm if they are applied after a discriminating study of the patient. In fact, such a discriminating study will greatly limit their use because it will be seen that the stock vaccine rarely fits the case.

With reference to the *Bacillus lactis bulgaricus:* There is a large amount of literature to the effect that the *Bacillus bulgaricus* hinders putrefaction in the intestinal canal. While there may be some question as to a greater success in securing the implantation of this bacillus by administering it in "live cultures," the report of the Council on Pharmacy and Chemistry (THE JOURNAL, Dec. 6, 1913, p. 2084) shows that such a culture is likely to reach the consumer in a more active state than one in the form of tablets.

TOXIC ACTION OF SODIUM CACODYLATE

To the Editor:—I have heard that subcutaneous injections of arsenic may cause blindness or other injury to the eye. I am using the cacodylate of soda, Clin Laboratories, Paris, and I am anxious to know whether there is anything to fear from continuing the treatment too long. Can you give me any information?

THEODORE DUNHAM, M.D., Northeast Harbor, Maine.

ANSWER.—Sodium cacodylate (CH_3) $2AsO.ONa + H_2O$ is an organic preparation of arsenic in the form of a sodium arsenate in which two molecules of the methyl radical, CH_3, have replaced two molecules of hydroxyl, OH, in the arsenic acid. The arsenic is in a firm, organic combination and in the form of arsenic acid. It appears to have no therapeutic action and to be non-toxic so long as it remains in the form of an arsenate. It is slowly reduced by the organism to a compound containing the arsenic in the form of arsenous acid, and in this form the arsenic is therapeutically active and is slightly toxic. The toxicity of sodium cacodylate, however, is so slight that therapeutic doses do not give rise to toxic symptoms. Dawes administered 0.5 gm. to a rabbit weighing about 2,800 gm. without effect, although an injection of 1 gm. to a similar rabbit was fatal (Dawes, S. L., and Jackson, H. C.: Physiologic Action, Elimination and Therapeutic Application of Sodium Cacodylate Used Hypodermatically, THE JOURNAL, June 22, 1907, p. 2090.) These doses correspond to about 10 and 20 gm. in man. The toxic action of sodium cacodylate is similar to that of inorganic arsenic. There is nothing in the literature to show that sodium cacodylate has a special action on the eye. The production of blindness by other arsenic compounds, e. g., atoxyl, is well known. In administering cacodylate of sodium there seems to be no need to fear the production of blindness. An odor of garlic may sometimes be observed in the breath or in the urine. The long-continued use of the preparation might give rise to slight symptoms similar to those occurring after the administration of inorganic arsenic, such as puffiness of the lids and redness and smarting of the eye. Sodium cacodylate will be found described in New and Nonofficial Remedies, 1914, p. 42.

RENEWING RUBBER GOODS

To the Editor:—Will you kindly publish a formula for renewing the rubber in soft rubber goods such as catheters, stomach tubes, etc. I have a number that are commencing to show signs of cracking and some of hardening.

R. L. B.

ANSWER.—We know no method for renewing rubber goods. Suggestions are published from time to time, however, as to the manner in which the life of rubber goods may be prolonged. It has been said that rubber goods kept covered with dry flour or powdered naphthalin in an air-tight receptacle will keep well. Another method is to keep the goods in con-

tact with the vapors of ammonium carbonate. For rubber tubes it is claimed that two coats of a syrupy solution of para rubber in benzine will materially lengthen their life. The following is from the *Druggist's Circular* (September, 1907, p. 600):

"Under ordinary conditions soft rubber goods will often remain unchanged for years; some lots will rapidly deteriorate. Whether this is due to differences beyond the control of the manufacturer or the result of the use of cheap methods, we are not in a position to say. Both causes may operate to lessen the keeping qualities of the goods. Exposure to unusual heat is said to be bad for rubber; whether air at normal temperature exerts any influence, there is a difference of opinion. One should endeavor to buy the best only; and purchases should not be made very far ahead of demand. Keeping the goods in a moderately cool place is probably about the only thing to be done to protect them."

RECIPE FOR AGAR-AGAR CRACKERS

To the Editor:—Is it possible to secure a recipe for agar-agar crackers? I should be grateful if you could tell me how to make them.

A. C. Kirksey, New Rochelle, N. Y.

Answer.—To make agar-agar biscuits it is only necessary to add the fine agar-agar to the flour used in making the biscuits. The amount should be, if possible, sufficient so that a dose (5 grams) may be included in each biscuit.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Colorado: Denver, October 6. Sec., Dr. David A. Strickler, Empire Bldg., Denver.

District of Columbia: Washington, October 13-15. Sec., Dr. George C. Ober, 125 B St., S. E., Washington.

Georgia: Atlanta, October 13-15. Sec., Dr. C. T. Nolan, Marietta.

Idaho: Wallace, October 6. Sec., Dr. John F. Schmershall, Jerome.

Illinois: Chicago, October 6-8. Sec., Dr. C. St. Clair Drake, Springfield.

Kansas: Topeka, October 13-15. Sec., Dr. H. A. Dykes, Lebanon.

Louisiana: New Orleans, October 29-31. Sec., Dr. E. L. Leckert, New Orleans.

Michigan: Lansing, October 13-15. Sec., Dr. Beverley D. Harison, 504 Washington Arcade, Detroit.

Minnesota: Minneapolis, October 6-9. Sec., Dr. Thomas McDavitt, Lowry Bldg., St. Paul.

Mississippi: Jackson, October 27-28. Sec., Dr. E. H. Galloway, Jackson.

Montana: Helena, October 6. Sec., Dr. William C. Riddell, Helena.

Nevada: Carson City, November 2, Sec., Dr. S. L. Lee, Carson City.

New Jersey: Trenton, October 20-21. Sec., Dr. H. G. Norton, Trenton.

New Mexico: Santa Fe, October 12. Sec., Dr. W. E. Kaser, East Las Vegas.

Oklahoma: Muskogee, October 6-8. Sec., Dr. John W. Duke, Guthrie.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

West Virginia: Clarksburg, October 13. Sec., Dr. S. L. Jepson, 81 Twelfth St., Wheeling.

Higher Entrance Standards in Manitoba

The new announcement from the Manitoba Medical College, Winnipeg, says that beginning in 1915, senior matriculation (the equivalent of the twelfth grade course in one of the best four-year high schools) will be required for admission to the five-year medical course. The first year of the latter is devoted chiefly to the sciences, physics, chemistry and biology. The requirement in all the Canadian medical schools, heretofore, has not exceeded junior matriculation or completion of the third year (eleventh grade) of high school work.

Higher Preliminary Requirements

According to the requirements of the medical practice act of Washington, graduates of 1918 and thereafter who desire to practice medicine in that state must show evidence of having completed at least one year of collegiate work in addition to graduation from an accredited four-year high school or an equivalent education. This requirement applies to all students matriculating this fall—for the session of 1914-1915 and thereafter. There are now twenty-one states which have adopted the requirement of one or two years of collegiate work as the minimum requirement of preliminary education.

College Requires Intern Year

The announcement just received from the University of California Medical School states that all students matriculating this fall—for the session of 1914-1915 and thereafter—will be required to serve a fifth year as an intern in an approved hospital or in other special work. This is the fifth medical college in this country to adopt this requirement, the others being the University of Minnesota Medical School, Rush Medical College, Leland Stanford Jr. University School of Medicine, and the University of Vermont College of Medicine.

Illinois May Report

Dr. C. St. Clair Drake, secretary of the Illinois State Board of Health, reports the written examination held at Chicago, May 12-14, 1914. The number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 177, of whom 140 passed and 37 failed. The following colleges were represented:

College	PASSED	Year Grad.	Total No. Examined
Bennett Medical College	(1912) (1913)	(1914,31)	33
Chicago Coll. of Med. and Surg.	(1912,2) (1913,3)	(1914,20)	25
Hahnemann Med. College and Hosp., Chicago	(1910) (1913)		2
Jenner Medical College	(1914)		1
Northwestern University	(1913,2)	(1914,16)	18
Rush Medical College	(1902)	(1914,34)	35
University of Illinois	(1913)	(1914,18)	19
University of Louisville	(1907)		1
University of Michigan, Homeo. Med. College	(1883)		1
Kansas City Medical College	(1888)		1
John A. Creighton Medical College	(1913)		1
University of Tennessee	(1899)		1
Marquette University	(1913)		1
National University, Athens	(1908)		1
FAILED			
Bennett Medical College	(1912) (1913)	(1914,2)	4
Chicago College of Med. and Surg.	(1910) (1911,2) (1913)	(1914,6)	10
College of Med. and Surg. (Physio-Medical)	(1910)		1
Hahnemann Med. College and Hosp., Chicago	(1912)		1
Hering Medical College	(1913)		1
Jenner Medical College	(1912)	(1912,2)	3
National Medical University, Chicago	(1903)	(1909)	3
Northwestern University	(1913)		3
Rush Medical College	(1914)		1
University of Illinois	(1912)		1
Hospital College of Medicine, Louisville	(1904)		1
Detroit College of Medicine	(1910)		1
American Medical College	(1912)	(1913)	2
Barnes Medical College	(1910)		1
St. Louis College of Physicians and Surgeons	(1907)		1
Meharry Medical College	(1907)	(1914)	2
Royal University, Palermo, Italy	(1911)		1
University of Zurich, Switzerland	(1911)		1

Arizona July Report

Dr. John Wix Thomas, secretary of the Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, July 7-8, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 18, of whom 12 passed, including 3 osteopaths, and 6 failed, including 3 osteopaths. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Colorado	(1913)		82.8
Northwestern University	(1904)		82.1
Rush Medical College	(1906) 78.8;	(1913)	81
University of Maryland	(1914)		81
Barnes Medical College	(1902)		77.3
Washington University	(1912)		84.7
John A. Creighton Medical College	(1905)		75
University of Pennsylvania	(1898)		81.6
FAILED			
California Eclectic Medical College	(1912)		50.6
Baltimore Medical College	(1913)		67
Jefferson Medical College	(1885)		63 8

Book Notices

THE EARLY DIAGNOSIS OF TUBERCLE. By Clive Riviere, M.D., F.R.C.P., Physician to Outpatients, City of London Hospital. Cloth. Price, $2. Pp. 260, with 30 illustrations. New York: Oxford University Press, 1914.

This is a highly instructive addition to the literature of tuberculosis. It deals with the recognition of incipient symptoms, chest signs and complications, and considers in minute detail the recognition of the earliest ravages of the disease. The summary after each discussion is helpful in fixing the points in the memory. Exhaustive chapters on special diagnostic tests (especially roentgenography) are great helps. The uses of tuberculin for diagnostic and therapeutic purposes are definitely stated and should be an aid to the general practitioner in confirming other signs and symptoms. Part 2 concerns itself with tuberculosis in children and with infection of the thoracic glands and hilum. The same procedure for proper diagnosis is pursued as in the first part of the book, and some statistics are added as to the occurrence of this lesion, which is perhaps the earliest stage of lung tubercle in childhood. The temperature as a guide to the existence of tubercle is shown to be at fault many times, as averages show a range of temperature in normal children by mouth from 97.4 to 100.5, depending on time of day and age. The conclusion is deduced that a few points must be allowed in childhood both above and below the normal limits for adults; but in all cases we should examine carefully into the cause of temperature fluctuation, such as rest or exercise, atmospheric temperature, rectal or oral, etc. Distinct fever is a valuable indication, but its absence does not exclude tuberculosis. The cutaneous test of von Pirquet is of value in the first two or three years of childhood. The percutaneous test of Moro and Dogono is of less value. The intracutaneous test (Mendel) made into the substance of the skin has the disadvantage of technical difficulty, and the reaction is painful. The subcutaneous test (Escherich) has the advantage that reaction can be obtained in active cases in which the cutaneous test is liable to prove negative. There are many other good features elaborately discussed which space forbids mentioning. All in all, the work is a valuable reference book.

THE SOURCE, CHEMISTRY AND USE OF FOOD PRODUCTS. By E. H. S. Bailey, Ph.D., Professor of Chemistry, University of Kansas. Cloth. Price, $1.60 net. Pp. 517, with 75 illustrations. Philadelphia: P. Blakiston's Son & Co., 1914.

The work of the chemical laboratory of the University of Kansas is generally well known among those interested in the subject. This work by Bailey coming from that laboratory will be found sufficiently complete to serve as a text for students of foods, and will be of aid to every householder in the judgment as to what is suitable and safe. A more general dissemination of the knowledge offered in it would result without doubt in economic betterment and in better nutrition. The plan followed for presenting the various foods and beverages found in the markets of the world is to discuss their source, method of preparation for sale, packing, preserving, shipping, composition, nutritive and dietetic value and use by people of different countries. The book is well illustrated and well prepared.

BLOOD-PRESSURE IN MEDICINE AND SURGERY. A Guide for Students and Practitioners. By Edward H. Goodman, M.D., Associate in Medicine in the University of Pennsylvania. Cloth. Price, $1.50 net. Pp. 226, with illustrations. Philadelphia: Lea & Febiger, 1914.

We have already a number of small treatises on blood-pressure which aim to describe the instruments and their use as well as the physiologic and pathologic variations of the blood-pressure. The work of Goodman is well written and gives the essential details and describes the principles clearly. It will be found very useful to the general practitioner who is finding the sphygmomanometer as necessary as the thermometer or the stethoscope and must have some guide to its use and to the interpretation of its results.

PSYCHANALYSIS: ITS THEORIES AND PRACTICAL APPLICATION. By A. A. Brill, Ph.B., M.D., Chief of the Clinic of Psychiatry, Columbia University Medical School. Second Edition. Cloth. Price, $3 net. Pp. 393. Philadelphia: W. B. Saunders Company, 1913.

This new edition of Brill's well-known book is enlarged by the addition of two chapters, previously published in a medical periodical, and by the insertion of the reports of some new cases and analyzed dreams. It is not the scope of a book review to enter into a critical discussion of the value of this method and who shall apply it, or to take note of the personalities which are being bandied about between adherents and enemies of Freud's school. Thus Brill says: "Our local critics have not changed; they are constantly rehashing what was said abroad, and which was adequately answered long ago. They have not offered a single new idea of their own." It must be confessed that the absolutely unbiased observer will consider this a rather unphilosophic attitude. A year or so ago psychanalysis and Freud were the engaging topic of neurologic convocations. To-day, while the method and the theories seem to have a place in the study and treatment of nervous disease, they are being considered in a more sane light and in a better atmosphere. It is to be feared that the reader will not glean from Brill's book this present-day atmosphere. So enthusiastic a pupil of Freud as Brill cannot write in the light of a non-combatant. The reader who wishes to obtain a knowledge of the extreme limit of the Freudian school at this time can gain it from Brill's book.

A SHORT PRACTICE OF MIDWIFERY FOR NURSES, EMBODYING THE TREATMENT ADOPTED IN THE ROTUNDA HOSPITAL, DUBLIN. By Henry Jellett, B.A., M.D., F.R.C.P.I., Master, Rotunda Hospital. Fourth Edition. Cloth. Price, $2.50. Pp. 508, with 169 illustrations. New York: Paul B. Hoeber, 1914.

In the preface the author explains that in a book for nurses much must be written "which is beyond what their everyday practice would at first sight show to be necessary. Causes must be explained and methods of treatment must be given which it is not for a nurse to carry out, but which it is necessary for her to understand." He believes that if the nurse's knowledge is limited to the bare essentials which will enable her to deliver a case of normal labor she will be unable either to give her patient the required treatment before the physician reaches the case, or to give intelligent aid to the obstetrician when he does arrive. In spite of this prolog, practically the only thing which might have been omitted from the book is the chapter on hydatidiform mole; though this subject is of undoubted interest to the nurse, she is not likely to be called on to make a diagnosis or to treat such a condition.

TROPICAL MEDICINE AND HYGIENE. By C. W. Daniels, M.B., F.R.C.P., Lecturer on Tropical Diseases, London School of Tropical Medicine. With a Chapter on Snakes by A. Alcock, C.I.E., M.B., F.R.S. Second Edition. Part II. Cloth. Price, $3 net. Pp. 278, with 107 illustrations. New York: William Wood & Co., 1914.

The second part of this manual deals with diseases due to the metazoa, which include the parasitic worms; in addition, infestation with insects and the action of insects as carriers of disease are described. The book ends with a chapter on snakes and snake venoms. The treatment appears to be as thorough as in Part I, and a considerable number of infections dealt with are common to temperate climes, such as tapeworms, ankylostoma and trichinae.

THE MENTAL HEALTH OF THE SCHOOL CHILD. The Psycho-Educational Clinic in Relation to Child Welfare. Contributions to a New Science of Orthophrenics and Orthosomatics. By J. E. Wallace Wallin, Ph.D., Professor of Clinical Psychology, School of Education, University of Pittsburgh. Cloth. Price, $2. Pp. 461. New Haven: Yale University Press, 1914.

This is a collection of reprinted papers and addresses published and delivered by the author in recent years. As suggested in the preface, they form a unitary but not a systematic whole. The book is not a text for the beginner in the psychology of the growing child. For those who have made a start in the subject, the author's views on various large aspects of the question will be valuable.

Miscellany

Fire-Damp or Methane Indicator

An apparatus which may prove of great value in coal-mines has recently been invented by a resident of London and is known as the Williams fire-damp indicator or methanometer. The invention is a detector of the dangerous hydrocarbon fire-damp, a gas responsible for many serious explosions in coal-mines. The apparatus is made in two parts: one, an instrument which is very sensitive and responds quickly when fire-damp is present; the other, a dial indicator which shows the exact percentage of methane in the atmosphere. The detector and indicator may be placed side by side, enabling the miners themselves to know by what percentage of fire-damp they are surrounded, or the indicator may be placed at any convenient center. The connection between detector and indicator is electric. By either one of these methods a series of instruments posted in various parts of the workings forms a safeguard hitherto unknown.

It is thought that the introduction of fire-damp indicators will also advance the use of electric hand lamps for lighting purposes in mines. At present the old safety or oil lamp is used because its flame gives evidence of the presence of methane, but many accidents are attributed to the feebleness of its light. The inventor hopes to perfect a smaller instrument which can be easily carried by each miner. (A report by a scientific man with regard to the Williams fire-damp indicator and a descriptive pamphlet may be had from the Bureau of Foreign and Domestic Commerce, Washington.)

Sugar Solution and Coagulation

Last year by a curious coincidence THE JOURNAL published, on the same page, reviews of two articles, one commending sugar solution for its efficacy in promoting coagulation and the other commending it for its property of inhibiting coagulation (June 7, 1913, pp. 1840-1841). E. Schreiber called attention to his success with intravenous injection of a 5 to 20 per cent. solution of sugar to arrest internal hemorrhage, while F. Kuhn commended sugar solution proctoclysis in prophylaxis of thrombosis. J. Löwy has been following Schreiber's directions in twelve cases of internal hemorrhage, as he reports in the *Prag. med. Wchnschr.*, Aug. 13, 1914, and states that a good effect was realized in two of the four cases of intestinal hemorrhage from unknown cause or from anemia. The tendency to hemorrhage seemed to be arrested in twenty-four hours after infusion of 200 c.c. of a 20 per cent. solution of grape sugar, and within a week, in the anemia case, the reds rose from 940,000 to 2,340,000. No effect was apparent in the case of hemorrhagic nephritis, and only two of the seven patients with hemoptysis showed any benefit, and this not more than might have been realized from the repose alone, without the sugar. Löwy regards his results as discouraging the use of the method, as greater benefit can be counted on with other, less complicated measures, except possibly for intestinal hemorrhage.

Medical Education and the Public

"Thirty [should be ten] years ago, any ambitious youngster who had the price could find some 'college' ready to fit him out with the magic letters, 'M.D.'—ofttimes after a 'course of study' so petty that a plumber's apprenticeship was a liberal education by comparison. To-day, most of these diploma mills have been closed—though a few continue to do business at the old stand and to send forth wretchedly unprepared men to undertake that most responsible task in the world, the care of the sick. The country needs, not more doctors, but better ones. It is getting them. The medical course of study in a first-class medical college of to-day is calculated to try the earnestness as well as the ability of a would-be physician."—*Chicago Daily Journal.*

Medicolegal

Physician Held Entitled to Injunction Against Former Partner

(*Marvel vs. Jonah* (*N. J.*), *90 Atl. R. 1004*)

The Court of Errors and Appeals of New Jersey reverses a decree of the court of chancery so far as it refused the complainant an injunction. The court says that the vice chancellor before whom the case was heard in the court below held that the complainant was entitled to an accounting, and to have the partnership dissolved because of breaches of the partnership agreement by the defendant, but refused to enforce against the latter his covenant to refrain from practicing his profession in the city for a period of three years, in case the partnership was terminated because of violations of the contract by him. The conclusion of the vice chancellor that it would be unjust and unnecessarily oppressive to enforce the restrictive covenant against the defendant seemed to be based on the idea that, although the independent practice of his profession in that city by the defendant would result in a loss of patients by the complainant, yet, even after such loss, the latter's practice would still be so large as to be beyond his ability to cope with it without the assistance of others, and, consequently, that the restraint sought by him against the defendant would be of little value to him if granted. The premises, however, did not justify such a conclusion. If the complainant had built up a practice so large that he was unable to take care of it without the aid of qualified assistants, he was entitled to the emoluments thereof, and to be protected against the loss of those emoluments through illegal competition. It will hardly do to say that a man who has built up a business so extensive that he cannot handle it without the aid of a staff of assistants suffers no loss or injury by its diminution in volume to such an extent that he no longer needs assistance to carry it on, provided that what remains of it is sufficient to fully occupy his own time. Common experience is to the contrary. The right of the complainant to the aid of a court of equity to restrain the defendant from violating his covenant to refrain from practicing his profession in the city for three years after the termination of their partnership agreement did not depend on the extent of the injury to his business which would result from such violation. It was sufficient that such injury was material. Moreover, the damages arising from the breach of such a covenant as that now under consideration, would be continuing, accruing from day to day, and it would be impossible to ascertain the money loss sustained by the complainant therefrom with anything approaching accuracy, and an action for damages would afford no adequate remedy. Nor could it be really said that to grant an injunction would be unjust to the defendant because it would deprive him of practicing in the only field of his acquaintance. The fact that the performance of such a promise involves personal hardship, or pecuniary loss, to the promisor, affords no justification for non-performance.

What Is Required of Physicians and Surgeons—Malpractice Liability and Evidence

(*Longfellow et al. vs. Vernon* (*Ind.*), *105 N. E. R. 178*)

The Appellate Court of Indiana, Division No. 1, affirms a judgment for $2,500 damages in favor of the plaintiff, Vernon, against Dr. Longfellow and another, partners, who had attended the plaintiff when she, at about the age of 5 years, had slipped and injured her right leg and ankle. It was charged that the defendants had negligently failed to discover a split in the bone of the leg near the ankle-joint, used ordinary gasoline to remove an adhesive bandage or plaster, placed on the badly swollen limb a bandage or plaster-of-Paris cast so tight as to greatly impede the circulation, from which blood-poisoning resulted which extended to all parts of the body, necessitating a removal of part of the bone between the knee and the foot and the scraping of the bone of the right shoulder, etc. The court holds that the

evidence was sufficient to warrant the jury in returning a verdict against the defendants.

The court says that if the want of that reasonable degree of skill and learning ordinarily possessed by physicians and surgeons practicing in similar localities at the same time, or the negligence of the physician or surgeon in diagnosing the case or treating his patient, is the proximate cause of injury to the patient, the physician or surgeon is liable to answer in damages therefor. In other words, the implied obligation of the physician or surgeon to his patient is that no injurious consequences shall result to him from want of proper learning, skill, care and diligence. Failure to exercise the reasonable care and diligence required by the law may be predicated on things done that should not have been done, or on the negligent failure to do or cause to be done something that should have been done, in the particular instance.

The question of negligence, or failure to exercise ordinary skill and care in the treatment of any particular case does not depend on the professional skill and learning of the physician, but is to be determined from a consideration of his acts, conduct, omissions and treatment in the particular instance. If he possessed the highest degree of skill and learning in his profession, and failed to exercise the care and diligence required by the law in treating his patient, his skill and learning could not shield him from the consequences of such negligent treatment. On the other hand, if he did not possess the skill and learning required by the legal standard, but this treatment in the particular instance was proper, he could not be held liable for the want of such skill which resulted in no injury to the patient.

Whether the treatment of any particular injury or case was proper, or whether a surgical operation was skilfully performed, or whether a particular disease resulted from alleged negligent treatment, and like questions of science, must of necessity depend on the testimony of physicians and surgeons learned in such matters. In such a case as this, however, in which the issues presented the question of the defendants' want of professional skill and learning, and likewise that of negligence in failing to exercise ordinary or reasonable care and diligence in diagnosing and treating the plaintiff's injury or disease, all the facts and circumstances of the treatment, the condition and conduct of the patient, the acts and conduct of the physicians, their omissions, if any, and any other fact that may throw light on the questions at issue are proper matters of evidence to be given by any competent witness, either to support or to negative the charge of malpractice.

Courts without Power to Order Physical Examinations

(Yazoo & Mississippi Valley Railroad Co. vs. Robinson (Miss.), 65 So. R. 241)

The Supreme Court of Mississippi holds that, until the legislature chooses to authorize it by statute, the courts of that state have no power to compel plaintiffs in personal-injury cases to submit to physical examinations by reputable and disinterested physicians appointed by the courts. The court says that this important question has not heretofore been considered by it, and that it prefers, rather than determine whether the court below erred in the instant case in overruling the railroad company's motion, to have the plaintiff submit to such an examination to be made at the expense of the company, to settle question of the power of the circuit courts of Mississippi to make the order the company requested by its motion. An examination of the decisions of the state courts on this point discloses irreconcilable conflict. The Supreme Court of the United States said, in Union Pacific Railway Co. vs. Botsford, 141 U. S. 250: "The order moved for, subjecting the plaintiff's person to examination by a surgeon, without her consent and in advance of the trial, was not according to the common law, to common usage, or to the statutes of the United States." This expression applies with equal force to the practice, the common usage and statutes of Mississippi. Whatever may be the rules and practice of other states, the common law controls here until the legislature chooses to act on the question.

Society Proceedings

COMING MEETINGS

Amer. Academy of Ophthal. and Oto-Laryn., Boston, Oct. 19-21.
Amer. Assn. for Study and Prevention of Inf. Mortal., Boston, Nov. 12.
American Association of Railway Surgeons, Chicago, Oct. 14-16.
Delaware State Medical Society, Wilmington, Oct. 13-14.
Idaho State Medical Association, Boise, Oct. 8-9.
Mississippi Valley Med. Assn., Cincinnati, Oct. 27-29.
Nevada State Medical Association, Reno, Oct. 13-15.
New Mexico Medical Society, Albuquerque, Oct. 5-7.
Southern Medical Association, Richmond, Nov. 9-11.
Vermont State Medical Society, Rutland, Oct. 8-9.
Virginia Medical Society, Washington, D. C., Oct. 27-30.
Wisconsin State Medical Society, Oshkosh, Oct. 7-9.

AMERICAN ROENTGEN RAY SOCIETY

Fifteenth Annual Meeting, held in Cleveland, O., Sept. 9-12, 1914

The President, Dr. Sidney Lange, Cincinnati, in the Chair

Officers Elected

The following officers were elected for the ensuing year: president, Dr. Alfred L. Gray, Richmond, Va.; vice-presidents, Drs. W. H. Stewart, New York City, and D. R. Bowen, Philadelphia; secretary, Dr. Willis F. Manges, Philadelphia; treasurer, Dr. Leonard Rey, Buffalo, N. Y.; member of executive committee, Dr. H. W. Van Allen, Springfield, Mass.

The Interpretation of Pericolic Membranes

Dr. E. H. Skinner, Kansas City, Mo.: The disposition to take roentgenograms of the abdominal viscera at their face value is extremely dangerous, as there is probably nothing which lends itself so easily to misinterpretations of thought. The increasing use of fluoroscopic palpation in both the horizontal and vertical positions will help to eliminate many faulty impressions of single roentgenograms.

DISCUSSION

Dr. George E. Pfahler, Philadelphia: If the surgeon and roentgenologist would work together more, we would make better progress. I gathered from Dr. Skinner's paper that he considers as diagnostic signs the defects in filling and dilatation of the cecum as the result of constriction above. The condition of reverse peristalsis is an important one to observe.

Dr. A. W. Crane, Kalamazoo, Mich: Roentgenologists have a great responsibility in advising surgeons concerning operations on the intestinal tract which they interpret as stasis. If we pay attention to the clinical laboratory and the physiology of the gastro-intestinal tract, we can be of great assistance. Whenever we have a kinking of the intestinal tract it gives rise to auto-intoxication, and to the absorption of putrefactive products. That gives a reaction in the urine which is definite, namely, the indican reaction. Whenever indican is found in the urine, there is a deficient secretion of hydrochloric acid in the stomach. Food material is not digested in the stomach. The hydrochloric acid is secreted, not for the purpose of digestion, but for the purpose of sterilization, primarily. Even water taken into the stomach is not absorbed, nor are the proteins in the stomach absorbed by it, but by the intestinal canal. The present physiologic view of the stomach is that it is a sterilizing chamber, and that the hydrochloric acid is the material which accomplishes the sterilization. When the condition of intestinal stasis exists, indican appears in the urine and the patient presents symptoms of auto-intoxication. That is not a surgical case unless there is a definite obstruction which causes dilatation. If hydrochloric acid be administered, it will often cause a disappearance of the symptoms. Therefore, many of these patients who do not receive such treatment, but who are subjected to a short-circuiting operation, are not relieved permanently of auto-intoxication. It is here that the roentgenologist can be of much service, especially if he calls the clinical laboratory to his assistance. He is not warranted in advising surgical operation when he discovers evidence of

kinking in the bowel. It is merely a question of how much harm is the kinking doing.

Dr. A. M. Cole, Indianapolis: I have examined quite a number of patients who had a short-circuiting operation and, much to my surprise, as well as that of the surgeon, I found that there was still some stasis present. I think we are apt to see too much in roentgenograms of the intestinal tract. Adhesions, kinks and ptosis undoubtedly are present, and a few require surgical intervention, but there is no doubt that some of these patients are perfectly well. Function is the important question to be considered. Is the stasis due to organic disturbance, or to the fact that the patient is anemic, atonic and tired? It has been my experience that under proper hygienic régime many of these patients have become perfectly well in from three to six months. All the intestinal symptoms disappeared. No matter how many kinks and bands may be present, if function is not interfered with, there is no necessity for surgical intervention. We assume a great responsibility when we advise operation because we find evidence of anatomic abnormalities in the intestinal tract.

Dr. George C. Johnston, Pittsburgh: One may demonstrate kinks in almost every case, but that does not mean anything if the kinks open up and the bowel empties itself. The mere existence of ptosis, adhesions, kinks and membranes means nothing unless these structures interfere with the functional activity of the intestinal tract. When they do, the case should be referred to the surgeon, but not otherwise.

Dr. James T. Case, Battle Creek, Mich: The key-note of this whole problem is function. The question does not hinge on the presence of kinks, bands and adhesions, but on function. The examination should not be confined to the colon or ileum, but the entire gastro-intestinal tract should be examined roentgenographically. Nevertheless, we must lay sufficient emphasis on intestinal stasis. Personally, I do not believe that short-circuiting is a solution of the question. That kinks can be shown roentgenographically is an accepted fact, but function is the condition that must be studied. Everyone has seen many cases of Lane's kinks which did not obstruct; these are not surgical cases. I think ileocecal-valve insufficiency is responsible for many cases.

The Protection Necessary When Using the Harder Rays

Dr. H. W. Van Allen, Springfield, Mass.: These conditions should be fulfilled in each case: (a) The target should point away from the operator. (b) The tube should be more than 6 feet from the operator. (c) Lead, 1/16 of an inch in thickness, should be on three sides of the switch booth, and 1/8 inch thick on the side directly between the tube and the operator. Between this lead and the operator must be some material capable of absorbing the secondary rays caused by the gamma rays striking against the lead. A good arrangement is to place the lead outside of the wood material of the booth. (d) The booth should be ventilated as the depressive effect of ionized air is harmful. These are equally effective with all kinds of tubes, regardless of their type. It is with the deep therapy that new protective precautions are needed.

The new method of cross-fire treatment increases the time per patient materially, and as we will have in the near future tubes which give almost pure gamma rays in large quantities, with little limit to the length of time such tubes can be kept active, it is evident our danger as operators will be greatly augmented. Of all of the above elements of safety, distance is of the greatest importance.

The first essential of tube protection is that it should be a non-conductor of electricity. It should be as resisting to the Roentgen ray as possible. It should be as light weight as posible. For neither of the two latter requirements is glass ideal, several substances being more practical. Many refinements of technic can be added to such a tube-covering, as devices to cool the tube with forced air current. It should carry some means for holding the filters, as these are better so placed than on the patient. This will avoid burns from a secondary ray. These tube-coverings should be as small as possible to facilitate their use in depressions, as the neck, groin and perineum.

Roentgen Diagnosis of Lesions of Vermiform Appendix

Dr. H. M. Imboden, New York City: Retention of cecal contents after the cecum is apparently empty should be regarded as suggestive of chronic appendicitis. A tender area definitely located in the course of the appendix must be regarded as very suspicious. The Trendelenburg position affords opportunity to study this area unapproached by any other. Stereoroentgenography affords the increased amount of information usual to this method in general.

DISCUSSION

Dr. A. Howard Pirie, Montreal: I watched a barium-filled appendix for three weeks and then had the opportunity, forty-three days later, to examine the appendix, which had been removed. It was still filled with the barium. The patient in that case was suffering from gastric symptoms. The appendix was not referred to in any way. After I examined the patient roentgenographically I said that she ought to have an attack of appendicitis because the appendix contained barium. Three weeks afterward she had the attack, with abscess formation. I do not know whether there is any coincidence in the fact of the barium having been given and the attack of appendicitis. I hope not.

Dr. Paul Eisen, Chicago: In every case of appendicitis examination of the stomach is of the utmost importance. Many patients are sent to us with a diagnosis of ulcer of the stomach, and on examination we find pathology in the appendix. These cases have a large six-hour residue in the stomach.

Dr. George E. Pfahler, Philadelphia: If this bismuth stays in the appendix for such a length of time, why was the appendix not filled with fecal material or food residue before the bismuth got into it? Why did not that stay and crowd the bismuth out?

Dr. D. R. Bowen, Philadelphia: I had one case in which a pin was found in the appendix. It had been lodged there for forty-two days, to my certain knowledge, and if I can accept the statement of the patient it was there for several months, and during all that time there were no symptoms referable to the appendix. The patient was examined because she was known to have swallowed some pins at one time, and also because she had some pain in the left iliac fossa. When the appendix was removed it was found acutely inflamed, enlarged and deformed. I cannot help but feel that in Dr. Pirie's case the barium had something to do with the attack of appendicitis.

Dr. E. H. Skinner, Kansas City, Mo.: In one of my cases there was an appendix shadow for six days after the bismuth meal. This case showed a duodenal ulceration, and a gastro-enterostomy was done, the appendix being removed at the same time. On examination it appeared to be perfectly normal. One can frequently see the appendix forty-eight hours after a bismuth meal, but not before, so that probably the appendix fills as a result of antiperistalsis of the bowel.

Dr. B. C. Darling, New York City: Whether the appendix fills in a certain time or does not, depends on whether it was empty before the bismuth got into that region. Any observation in this connection, to be of value, must be based on an examination of may hundreds of cases. I do not see how the mere fact of retention in the appendix can be taken to mean anything in particular.

Dr. L. T. Le Wald, New York City: I think that the retention of bismuth in the appendix is an indication of a sluggish function of the appendix. We examined three cases of diverticulitis which came to operation. They showed a retention of bismuth in the pockets, the bismuth remaining there for over a week.

Dr. A. Howard Pirie, Montreal: When the patient is in an upright position, with the appendix hanging down into the pelvis, the fluid contents of the ileum are churned up when they reach the cecum, and when this material begins to settle, the heavy part goes down, and if the appendix hangs down straight this material will settle in the appendix. The same may be true when the patient is lying down, if the appendix hangs down over the pelvic brim. That was the

case in my patient and probably was the reason why the barium salt was retained in the appendix for so long a time.

DR. JAMES T. CASE, Battle Creek, Mich.: These cases can be examined fluoroscopically. I have seen the appendix in 600 cases, and then I stopped counting. The essential point is not whether the appendix is filled or not, but the fact is that the appendix does not participate, very actively, at least, in the peristaltic movements of the cecum. There is an antiperistalsis which I have demonstrated by means of roentgenograms, which showed the transfer of the material from the descending colon and the hepatic flexure by a so-called mass movement, clear across the transverse colon. Antiperistalsis is a very important factor in normal digestion. If antiperistalsis occurs, this material in the colon will get into the appendix and even back into the ileum.

DR. W. H. STEWART, New York City: If there is a retention of material in the appendix for many days, it certainly means a loss of function on the part of that organ, probably the result of some irritation. I believe that in every one of these cases there is some pathology in the appendix.

DR. A. W. CRANE, Kalamazoo, Mich.: Except in catarrhal appendicitis the lumen of the appendix is closed, and as soon as the lumen is closed there is progressive sepsis in the appendix. Appendicitis means bacterial activity. When the appendicitis begins as a catarrhal process the bismuth never enters the appendix. If bismuth can be demonstrated in the appendix, I believe it means that that is not an inflamed appendix. Such an appendix certainly is not the seat of a stricture. When we cannot show the appendix in the roentgenogram, and we can demonstrate a pain point in the region of the appendix, it suggests appendicitis. Here, as in other portions of the gastro-intestinal tract, we ought to be very careful about our advice.

(To be continued)

COLORADO STATE MEDICAL SOCIETY

Forty-Fourth Annual Meeting, held at Boulder, Sept. 9-11, 1914

(Concluded from page 1134)

Some of the Professional Responsibilities of the Physicians of Colorado

DR. O. M. GILBERT, Boulder: Almost every physician in Colorado should be an expert in the diagnosis and management of tuberculosis. The frequency with which a case is permitted to pass unrecognized through the really incipient stage, in which a cure is almost certain, is appalling. Few influences have been more potent during the past two decades in bringing the practice of medicine up to its present high standard than the medical society. There the best that is in us is stimulated, while our petty differences, which are so unworthy of our high calling, soon sink into oblivion.

There has been entirely too much special and indiscriminate legislation on medical matters. At the last session of the California legislature, for instance, thirty-nine bills were introduced which had to do in part or in whole with medical or health affairs. Much would be gained by the repealing of about two-thirds of the laws of this nature that are now on the statute books, and follow by creating a health commission or department of public health, with its duties and powers well but broadly defined, which could deal efficiently with many of the affairs which are now dealt with so inefficiently by the special acts.

Acute Intestinal Obstruction

DR. C. E. TENNANT, Denver: Three factors are extremely important to the successful care of bowel obstruction. The first of these is the early recognition of the lesion; the second, the immediate exploratory effort, and the third, the good judgment and originality of the operator, who devises methods whereby bowel section may be avoided, even though the early circulatory and necrotic changes may have already commenced in the bowel wall.

In briefly summing up the means at hand for reducing the present high mortality attending acute bowel obstruction the following four important rules should be observed: first, the early recognition of the lesion even at the expense of exploratory laparotomy; second, the total abstinence from all purgative laxatives and ingestion of fluids which may hasten the rotation of the intestine and its attendant circulatory embarrassment; third, the frequent stomach lavage prior to and often after the operation; fourth, to bear in mind that unless absolutely indicated, the penalty for bowel resection at this time is a greatly increased hazard for the patient.

Use of Amniotic Membrane in the Prevention of Peritoneal Adhesions

DR. C. B. LYMAN, Denver: I have operated in twenty cases in which the membrane has been employed; most of these were cases in which adhesions had developed after abdominal operations and the symptoms were very distressing. All the patients have been completely relieved of the symptoms which had been in existence prior to the operation. Clinically, the results have been perfect in all cases.

Modern Views on Biliary Calculosis

DR. J. L. MORTIMER, Denver: The absolute indications for operation are: 1. The acute infectious cholecystitis, not responding to a few days medical treatment. To this may be added peritonitis due to perforation of the gall-bladder or ducts. 2. Empyema and all suppurative processes of the gall-bladder region or liver. 3. Chronic choledochus obstruction, when medical treatment is without effect, and when intermittent hepatic fever sets in. 4. Chronic relapsing cholecystitis, when medical therapy fails. 5. Adhesions when therapy fails. 6. Hydrops vesicae follae, with persistent and severe irritative phenomena. 7. Acute intestinal obstruction in patients with a history of gall-stones. 8. When carcinoma is suspected.

Tendon Transplantation Following Infantile Paralysis

DR. C. G. MCEACHERN, Denver: It is my opinion that every case of infantile paralysis can be benefited by surgical procedure.

Treatment of Weak and Flat Feet

DR. GEORGE B. PACKARD, Denver: We must aim to make passive motion possible without pain, spasm or deformity, and to strengthen the muscles, thus restoring function and overcoming deformity and obstruction. The indiscriminate use of foot plates may in some cases do a great deal of harm by weakening the muscular support of the foot. In mild cases or when the feet seem normal at rest, but abducted on weight bearing, the shoes may be modified in such a way as to correct the abnormal position. The next stage is when muscular spasm develops with increase of pain and abduction of the foot. It will be necessary now to put the foot at rest, and this can generally be done in the milder spasmodic cases by adhesive plaster strapping, the foot first gradually but rather forcibly being put into the corrected position. Arch supports may be used later in these cases but should not be used until spasm and resulting pain are relieved. In the more severe cases of this variety an anesthetic must be given, and plaster of Paris applied after the foot has been overcorrected. It is very important also to maintain dorsal flexion as well as adduction. If adhesion or bony changes have taken place, the same effort should be made to correct the deformity if possible by manipulation.

Medical Ethics.—Good ethics, then, is to be found among surgeons who, following the teaching of Hippocrates and Aristotle of Celsus and Galen maintain that he is the upright scientist who pursues his art by the light of sound reason; who draws his conclusions and guides his practice by deductions founded on accurate observation, who observes that clear inductive method which is older than history; who abhors exaggeration and pretence; who practices square dealing; who conducts himself toward his fellows and toward the public as a generous and honorable man.—James G. Mumford, *Clifton Med. Bull.*

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

September, XXXV, No. 9, pp. 479-526

1 *Case of Adult Type of Poliomyelitis. H. C. Gordinier, Troy.
2 Modern Psychiatry as Related to Therapeutics. J. V. May, Albany.

1. **Case of Adult Type of Poliomyelitis.**—Gordinier reports two cases. The first was a case of rapidly ascending motor paralysis of the type of Landry, which began suddenly in the muscles of the lower extremities, extended rapidly upward, involving in turn those of the trunk, upper extremities and diaphragm, and without subjective or objective sensory disturbances, resulted in death from respiratory paralysis eight days from the onset. The second case was one of acute poliomyelitis in a young adult involving the muscles of both upper extremities and those of the left lower extremity. Death at the end of five days of respiratory paralysis.

Gordinier lays especial emphasis on the absence in his cases, together with many of the recorded cases, of the Landry complex in the literature, of mononuclear round-cell infiltration of the pia, and of the vascular walls, which is so characteristic pathologically of poliomyelitis. He believes from the study of his case and from a careful survey of the literature of Landry's disease, and that of poliomyelitis and multiple neuritis, that we still have a group of cases, identical or at slight variance with Landry's original description. These cases cannot be relegated either on clinical or pathologic evidence, to the adult type of poliomyelitis, or multiple neuritis. In view of the facts here presented, Gordinier believes that the term "Landry's Paralysis" cannot be dropped.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

September, LXX, No. 3, pp. 329-544

3 *Experimental Ligation of One Ureter with Application of Results to Clinical Gynecology. W. C. Jones, Chicago.
4 Pseudostruma of Ovary. L. W. Strong, New York.
5 *Case of Rupture of Corpus Luteum with Intraperitoneal Hemorrhage. M. R. Bookman, New York.
6 Abdominal Wall Hernia. A. B. Keyes, Chicago.
7 *Mortality in Cesarean Section. G. M. Boyd, Philadelphia.

3. **Experimental Ligation of One Ureter.**—Jones has ligated the ureter in fifty-two dogs; and the results of this work together with observations on a personal clinical case of probable ureteral obstruction by accident, constitute the basis of this paper. Its length and detail do not permit of making an abstract. Therefore the original should be consulted.

5. **Rupture of Corpus Luteum.**—Bookman is of the opinion that suddenly increased intra-abdominal pressure of trauma predisposes to the rupture of the forming or newly formed corpus luteum. The small so-called hemorrhagic cysts of the ovary when ruptured may easily cause laceration and bleeding. Cases of intraperitoneal hemorrhage due to this cause are frequently mistaken for ruptured extra-uterine pregnancy or acute appendicitis. Ovarian apoplexy, ruptured hemorrhagic cysts of the ovary, ovarian and pelvic hematoceles (when due to no other cause), ovarian hematomata and hemorrhage into the peritoneal cavity from a ruptured corpus luteum, may all be grouped as having the same etiology, differing only in degree. With acute pelvic pain at or about the time of menstruation slight rise of temperature, signs of peritoneal irritation with some anemia and a history of straining, the existence of a ruptured corpus luteum must be kept in mind. Treatment of the mild cases is symptomatic, of the severe cases, surgical. Prognosis is usually good in all cases except in those with associated pathologic blood conditions.

7. **Mortality in Cesarean Section.**—Boyd cites forty-eight cases of cesarean section. He says that the mortality in cesarean section depends on the skill of the operator and the condition of the patient at the time of operation. In clean cases, operated on before labor, the maternal mortality should not be more than from 2 to 3 per cent. When the case is under careful supervision, the labor test does not necessarily contra-indicate the classical operation, but after the membranes rupture, there exists danger of infection. The classical operation should not be performed in cases undoubtedly infected. The chief indication for the extraperitoneal or transperitoneal section is the "neglected case," or when that is mildly infected. When, however, the patient is seen late in labor, and undoubtedly infected, then, because of the high mortality, probably 25 per cent., supravaginal hysterectomy must be performed.

American Journal of Roentgenology, Detroit

June, I, No. 8, pp. 313-330

8 *Practical Results in Roentgen Ray Examination of Mastoid. S. Lange, Cincinnati.
9 Antero Posterior Position for Mastoid Roentgenography. P. M. Hickey, Detroit.
10 *Further Consideration of Roentgen Diagnosis of Luetic Skeletal Manifestations. P. Brown, Boston.

8. Abstracted in The Journal, Nov. 15, 1913, p. 1841.

10. Abstracted in The Journal, Nov. 8, 1913, p. 1743.

Boston Medical and Surgical Journal

September 17, CLXXI, No. 12, pp. 437-472

11 *Treatment of Hemoptysis in Pulmonary Tuberculosis. N. B. Burns, North Reading.
12 Treatment of Phthisis by Pulmonary Compression. C. Floyd, Boston.
13 Present Status of Artificial Pneumothorax Therapy. J. A. Lyon, Rutland.
14 Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. H. D. Chadwick, Westfield.
15 Id. Should Method Be Used? F. T. Lord, Boston.
16 Roentgen Ray as an Aid to Diagnosis of Pulmonary Tuberculosis. P. C. Bartlett, Boston.
17 Id. H. W. Van Allen, Springfield.
18 Id. P. H. Cook, Worcester.
19 Diagnosis and Treatment of Tuberculosis in Childhood. W. C. Bailey, Boston.
20 Roentgen Ray in Tuberculosis of Children. W. J. Dodd, Boston.
21 Tuberculosis in Children. R. M. Smith, Boston.

11. **Treatment of Hemoptysis in Pulmonary Tuberculosis.**—Applying his principles to an actual case, the following procedure is the one adopted by Burns in these cases. The patient is placed in a semirecumbent position, usually flat on his back, with curved basin at side of face for expectoration. Nitroglycerin 1/100-grain dose under the skin is immediately given from an emergency hypodermic unit. An icebag is placed on the chest and cracked ice is given by mouth for a few minutes. This should not be continued indefinitely after the initial excitement is passed, for the icebag is likely to cause trouble if applied for more than an hour at a time. In the meantime the physician quietly encourages the patient. Only ten patients have died of hemorrhage at North Reading since the institution was opened in 1909. Morphin is given with great reluctance and only in hopelessly advanced cases, in which the sole indication is to preclude all possible suffering.

When the hemorrhage is so extensive that the blood rushes into the bronchial passages of the well lung, causing dyspnea and cyanosis, it is best to turn the patient on his side with his head over the edge of the bed, allowing gravity to exert its influence in withholding the blood in the lung the worst diseased. Burns emphatically discourages the routine use of morphin in the usual case of hemoptysis. It seems better to him to open the intestinal tract freely in such cases. He uses magnesium sulphate in full doses, provided there are no positive contra-indications, as extreme asthenia, enteritis or any ulceration in the bowels.

No solid food is to be given for some hours after the initial attack, but cold milk or cold bouillon can be taken in small amounts at regular intervals. A dram of lime water is added to each 8 ounces of milk to improve its digestibility and to add to the body's calcium content. At the end of eighteen hours, barring recurrence, or heavy streaking, soft solids may be given. The patient is kept as quiet as possible. If an aggravating cough is present, small frequent doses of codein or heroin may be given, and with impunity so long as the bowels are kept open. Sodium nitrite and calcium sul-

phid each in 1-grain doses may be administered to the patient at three- to four-hour intervals for from twenty-four to forty-eight hours. Subsidence of streaking, as well as severe headache, call for discontinuance of sodium nitrite. Burns usually gives two doses of 1 ounce each of magnesium sulphate, one soon after the initial attack, and another on the second day. One week in bed with entire absence of streaked sputum is the requirement necessary before the patient is allowed up and about to any extent.

Bulletin of Lying-In Hospital of City of New York

June, IX, No. 4, pp. 249-342

22 Technic of Extraperitoneal Cesarean Section. B. C. Hirst, Philadelphia.
23 Five Cases of Extraperitoneal Cesarean Section. J. W. Markoe, New York.
24 *Craniotomies Done in Hospital from 1903 to 1913. E. S. Gushee, New York.
25 Cesarean Section. A. B. Davis, New York.
26 Certain Aspects of Midwife Problem in Relation to Medical Profession and Community. G. W. Kosmak, New York.
27 *Revival of Obstetric Chair. J. W. Markoe, New York.
28 Serum Diagnosis of Pregnancy by Dialysation Method. C. F. Jellinghaus and J. R. Losee, New York.
29 Case of Birth Dislocation of Lower Femoral Epiphysis. E. D. Truesdell, New York.

24. **Craniotomies.**—From 1903 to 1913, there were delivered in the two services of the hospital, 52,133 patients. Among this number there were 322 craniotomies, 64 in the out-door service that is about ⅛ of 1 per cent. of the deliveries, and 258 in the hospital, or in about 1 per cent. of the patients delivered. In the hospital proper over one-half of the cases in which a craniotomy was done were emergencies. They numbered 167, and the majority or 125 cases, had had unsuccessful attempts at delivery by physicians or midwives. This leaves 91 cases of craniotomy which occurred directly under the care of the hospital, which is about two-fifths of 1 per cent. of the 21,584 deliveries in the hospital service. Of these 91 craniotomies, there were 21 cases of eclampsia with premature dead babies, and 7 cases of placenta previa with premature dead babies. In the most of these cases the after-coming head was perforated to insure rapid delivery and to prevent severe cervical lacerations.

The indications for craniotomy in the two services were: Contracted pelves, 121; fetal death, 265; hydrocephalus, 14; cervical contractions (noted especially in premature cases), 34; tonic contraction of uterus, 6; cases of rapid delivery in interest of mother, placenta previa, 4, and eclampsia, 2. In 101 cases craniotomy of the after-coming head was done. Of the remaining 157 cases the basiotribe was used in 65, the cephalotribe in 43, the cranioclast in 32. In the remaining 17 there was no note as to the instrument used. Among the 258 craniotomies in the hospital there were 119 primiparae, 137 multiparae and 3 were not described. Over two-thirds were vertex presentations.

The number of deaths of mothers in the hospital were 35, or 10 per cent., of the number of cases in which craniotomy was performed, or one-tenth of 1 per cent. of the deliveries. Of the cases in the tenements on the other hand there was only one death of mother and in this instance a midwife had been in attendance for some forty-eight hours before the hospital was notified. Of the 36 deaths in the hospital 30 were among the emergency cases, in the remaining 6 the cause was as follows: 2 eclampsia, 1 diabetes mellitus and toxemia, 1 shock following hysterectomy for ruptured uterus, 1 endocarditis and chronic nephritis, 1 placenta previa. Of the 30 deaths in the emergency cases, 18 died from shock or hemorrhage, 9 from sepsis and 3 from eclampsia.

27. **Revival of Obstetric Chair.**—In looking about for a means of compelling the patients to assume the upright or squatting posture, the thought came to Markoe that a chair might be improvised that would keep the patient in the proper position and at the same time be comfortable or as comfortable as any woman can be when undergoing the pains of labor. Hence a chair was constructed which is depicted in this paper. The chair, it is believed, will be most useful during the first and early part of the second stage and is not in any way intended as a delivery table, although it could be easily modified so that it could be used for both purposes. The illustrations would suggest that a chair may be so constructed that it could be carried from house to house and thereby facilitate its use in private practice.

California State Journal of Medicine, San Francisco

September, XII, No. 9, pp. 357-396

30 Intimate Relation of Orthopedic Surgery to Neurology. H. W. Wright, Santa Barbara.
31 Treatment of Gastric and Duodenal Ulcer. R. Bine and E. Schmoll, San Francisco.
32 *Surgery of Gastric Ulcer. L. Eloesser, San Francisco.
33 Dose of Salvarsan. D. W. Montgomery, San Francisco.
34 Early Diagnosis of Cancer of Rectum. A. J. Zobel, San Francisco.
35 Psychotherapy in Urology. V. G. Vecki, San Francisco.
36 Photography in Relation to Medical Science. H. D. Power, San Francisco.
37 Case of Oidiomycosis. W. W. Roblee, Riverside.
38 Perforated Duodenal Ulcer. B. J. O'Neill and G. T. Courtenay, San Diego.
39 Value of High Frequency Current in Treating Calculi in Diverticulum. M. Molony, San Francisco.

32. **Surgery of Gastric Ulcer.**—Eloesser summarizes his views as follows: Acute ulcer is not to be treated surgically unless: (a) perforated; (b) bleeding obstinately, or (c) intractable by medical means. Hematemesis should not be made an indication for operation unless the presence of a bleeding ulcer can be reasonably sure. A preliminary transfusion of blood will often give time for diagnostic examination and benefit the patient meanwhile. Chronic callous ulcers suspicious of malignancy should be treated by resection and gastro-enterostomy. Chronic ulcers of evident innocence should be treated by gastro-enterostomy with or without pyloric closure. The results of resection are not sufficiently better than those of gastro-enterostomy to compensate for the added risk. Gastric procedures should not be carried out unless indicated by clearly demonstrable gastric lesions. At all operations for gastric ulcer, the abdomen should be carefully examined for extragastric irritative or infectious processes. The treatment of these may be more important causally than the treatment of the ulcer itself. Gastric operations are not causally but symptomatically therapeutic. Prolonged postoperative medical care is imperative.

Canadian Medical Association Journal, Toronto

September, IV, No. 9, pp. 757-852

40 Medical Profession and Militia. J. A. Grant, Halifax.
41 Treatment of Empyema, Subphrenic Abscess, etc., by Aspiration Followed by Injection of Formalin Solution. A. McPhedran, Toronto.
42 Linitis Plastica. G. E. Armstrong, Montreal.
43 Hour-Glass Contraction of Stomach. Report of Three Cases. A. Primrose, Toronto.
44 Industrial Disease and Industrial Hygiene. C. J. Hastings, Toronto.
45 Canadian Practitioner's Diagnosis of Pulmonary Tuberculosis. A. F. Miller, Kentville, N. S.
46 Importance of Balkan Wars to Medical Profession of Canada. G. C. Jones.

Cleveland Medical Journal

August, XIII, No. 8, pp. 523-594

47 Nature of Cutaneous Sensation, with an Instrument for Its Measurement. W. Timme, New York.
48 Paleolithic Giants and Dwarfs. T. W. Todd, Cleveland.
49 Gastric Surgery. F. C. Herrick, Cleveland.
50 *Impurities that May Occur in Nitrous Oxid. H. D. Haskins, Cleveland.
51 Office Practice in Rectal Diseases. S. Englander, Cleveland.
52 Mercuric Chlorid Poisoning. Case History. C. W. Race, Evanston, Ill.
53 Fate in Organism of Degradation Products of Protein. H. H. Biggs, Cleveland.

50. **Impurities That May Occur in Nitrous Oxid.**—Haskins found that the impurities present in nitrous oxid when too high a production temperature is used are ammonia and nitric acid, set free by heat dissociation of ammonium nitrate. When produced in a metallic apparatus, the cooled impure gas contains free ammonia. As low a production temperature as practicable should be used. In a closed apparatus there is no reason why the acid and ammonia should not recombine when cooled, forming ammonium nitrate and thus leaving no

ammonia or acid in the free state. If, however, the gas apparatus is metallic, some of the nitric acid is consumed in forming a salt with the metal, and the corresponding amount of ammonia cannot recombine with acid, so that it is left in the free state in the nitrous oxid. This poisonous gas must be removed by bubbling the nitrous oxid through dilute sulphuric acid.

Delaware State Medical Journal, Wilmington

July, V, No. 8, pp. 1-26

54 Morphin, Limitations and Uses as an Aid to Anesthesia. J. S. Keyser, Wilmington.

Indiana State Medical Association Journal, Fort Wayne

September, VII, No. 9, pp. 397-460

55 Direct Laryngoscopy, Bronchoscopy and Esophagoscopy with Modified Bruning's Bronchoscope. D. W. Layman, Indianapolis.
56 Prevalence and Manifestations of Malaria. G. D. Marshall, Kokomo.
57 Metastatic Infection. F. S. Cuthbert, Kingman.
58 Hemoptysis and Its Treatment. J. R. Stewart, Colorado Springs, Colo.

Journal of Biological Chemistry, Baltimore

September, XIX, No. 1, pp. 1-140

59 *Variations in Fat Content of Blood under Approximately Normal Conditions. W. R. Bloor, St. Louis.
60 Researches on Purines. C. O. Johns and B. M. Hendrix, New Haven, Conn.
61 Urea and Total Non-Protein Nitrogen in Normal Human Blood: Relation of Their Concentration to Rate of Elimination. F. C. McLean and L. Selling, Portland, Ore.
62 Elimination of Phenolsulphonephthalein in Acute and Chronic Tartrate Nephritis. F. P. Underhill and N. R. Blatherwick, New Haven, Conn.
63 Inhibition of Autolysis by Alcohol. H. G. Wells and G. T. Caldwell, Chicago.
64 *Phosphorus Content of Casein. A. W. Bosworth and L. L. van Slyke, New York.
65 *Cause of Acidity of Fresh Milk of Cows and Method for Determination of Acidity. L. L. van Slyke and A. W. Bosworth, New York.
66 Proteins of Blood of Limulus Polyphemus. L. C. L. Alsberg, Woods Hole, Mass.
67 Metabolism of an Isomer of Xanthin and Some Isomers of Methylxanthins. S. Goldschmidt, New Haven, Conn.
68 Drying Urine for Chemical Analysis. W. W. Braman, Philadelphia.
69 Excretion of Creatinin by Normal Women. M. Tracy and E. E. Clark, Philadelphia.
70 *Studies in Carbohydrate Metabolism. Influence of Subcutaneous Injections of Dextrose and Calcium Lactate on Blood-Sugar Content and on Tetany after Thyropara-Thyroidectomy. F. P. Underhill and N. R. Blatherwick, New Haven, Conn.
71 *Comparative Efficiency for Milk Production of Nitrogen of Alfalfa-Hay and Corn Grain. E. B. Hart and G. C. Humphrey, Madison, Wis.

59. **Fat Content of Normal Blood.**—Bloor found that feeding fat in the ordinary way caused an increase in the fat content of the blood beginning in about one hour after feeding and reaching a maximum in about six hours. When the thoracic duct was tied there was no increase in blood-fat after fat feeding. Intravenously injected fat as casein emulsions or in colloidal suspension up to 0.4 gm. per kilo of body-weight—enough to increase the fat content 100 per cent., disappeared from the blood in less than five minutes. Since the particles were from ½ to ⅓ the size of the red blood-corpuscles, the disappearance could scarcely have been due to a straining out by the capillaries, but rather to a storage in some way or other, possibly by the liver, since it has been shown that the injected fat accumulates in largest amount in the liver. When amounts of fat up to 0.8 gm. per kilo in the form of egg yolk were injected, some of the fat persisted in the blood for several hours, which might have been due to the flooding of the temporary storehouses beyond their capacity, or to the influence of the lecithin in the egg-yolk fat. Fasting of from five to seven days may or may not produce an increase in the blood-fat, depending apparently on the nutritional condition of the animal. An animal which did not ordinarily show any increase in blood-fat in fasting, was made to exhibit the usual curve of increase of blood-fat in fasting by stuffing with fat food for a week before the fast. Of the narcotics used, ether was the only one which ordinarily produced a rise in the fat content of the blood during the narcosis. Chloroform produced a rise in blood-fat only when the animal had been stuffed with fat for some time previously. The "after rise" in the blood-fat, i. e., an increased blood-fat content during the two or three days following narcosis was observed after chloroform and morphin but not after ether (only one case examined). Bloor's results as a whole indicate that fat may be stored in two ways: (1) a temporary storage in which the fat may be quickly but loosely stored and whose capacity is limited, and (2) the permanent fat depots which take up fat slowly and release it slowly.

64. **Phosphorus Content of Casein.**—By treating a solution of casein in dilute NH_4OH with ammonium oxalate and an excess of NH_4OH and letting stand twelve hours, the authors found that the phosphorus content is reduced to about 0.70 per cent. This lower percentage can not be explained as being due to hydrolysis of casein and splitting off of phosphorus. While some of the casein is hydrolyzed, this portion does not enter into the final preparation and does not affect its composition, because the hydrolyzed portion is not precipitated by acetic acid while the unhydrolyzed part is. Analysis of various preparations of casein containing varying amounts of ash show a general correspondence between the ash and phosphorus content.

65. **Acidity of Cow's Milk.**—The authors claim that the acidity of fresh milk is due to the presence of acid phosphates. Titration of phosphoric acid with alkali, in the presence of calcium salts, results in hydrolysis of dicalcium phosphate formed during the titration, whereby free calcium hydroxid and phosphoric acid are first formed and then calcium hydroxid unites with more dicalcium phosphate to form insoluble tricalcium phosphate. As a result of these reactions more alkali is required to make a solution, containing calcium and phosphoric acid, neutral to phenolphthalein, than is required in the absence of calcium. The calcium must be removed previous to titration by treatment of 100 c.c. of milk and 2 c.c. of saturated solution of neutral potassium oxalate.

70. **Thyroparathyroidectomy.**—According to the authors hypoglycemia resulting from thyroparathyroidectomy is neither the cause nor the effect of the accompanying tetany; for although dextrose injections restore blood-sugar content to normal, such injections have little influence over tetany. Moreover, the condition of hypoglycemia precedes that of tetany. It is therefore suggested that the removal of the thyroids and parathyroids gives rise to two distinct effects, one being manifested on the blood-sugar regulating mechanism, causing hypoglycemia, the other acting on the nervous system, producing tetany. Calcium appears to be intimately associated with both effects, for injections of calcium lactate will temporarily restore blood-sugar to normal and also abolish tetany for a time. Calcium may play an important rôle in maintaining the equilibrium of the blood-sugar regulating mechanism during normal life.

71. **Milk Production of Nitrogen of Alfalfa Hay and Corn Grain.**—Data are presented by Hart and Humphrey on the comparative value for milk protein production of the nitrogen from alfalfa hay and the corn kernel. The data indicate that on the plane of intake used the nitrogen of alfalfa hay is as effective for milk protein building as that of the corn kernel. The acid amid nitrogen of alfalfa is very low in amount, constituting about 1 per cent. of the total nitrogen, while the amino-acid nitrogen makes about 10 per cent. of the total nitrogen. It is well established that amino nitrogen has nutritive value and that of alfalfa hay is probably not an exception. Their experiments give no indication of the value of the acid amid nitrogen. The real nutritive value of the nitrogen of roughages should rest on the nature of the total amino-acid content derived from more complex proteins and preexisting free amino-acids rather than on the proportion of "amid" nitrogen as found by the Stutzer method.

Alfalfa hay has specific diuretic properties and its ingestion was generally followed by a marked rise in the output of

urine. This rise in renal activity caused a depression in the milk flow which again rose in volume as the alfalfa hay was withdrawn from the ration. The diuretic stimulus caused in some cases a shrinkage in volume of 5 to 6 pounds on a flow of 25 pounds daily. It is possible that this diuretic effect is due to salts contained in the hay, yet the possibility of the presence of specific substances of organic nature is not excluded.

Journal-Lancet, Minneapolis

September 15, XXXIV, No. 18, pp. 475-499

72 Visit to Surgical Clinics of Russia, Finland, Sweden, Norway, Denmark and Belgium. W. J. Mayo, Rochester.
73 Management of Hare-Lip and Cleft-Palate Cases. R. E. Farr, Minneapolis.
74 Elephantiasis Lymphangitica. H. L. Staples, Minneapolis.

Journal of Outdoor Life, New York

September, XI, No. 9, pp. 257-286

75 *Value of Tuberculin in Treatment of Tuberculosis. J. A. Miller, New York.
76 Those Who Help Themselves. H. Shigley, Colorado Springs, Colo.
77 Needs of Patients Discharged from Tuberculosis Sanatoria. C. F. Bolduan, New York.
78 After Sanatorium—What? S. E. Goldstein, New York.
79 Employment of Sanatorium Graduates. D. R. Lyman, Wallingford, Conn.
80 Letter to Life. C. H. Fahs, Madison, N. J.
81 Our Foreign-Born Population as Factor in Tuberculosis Problem. W. L. Rathbun, Otisville.
82 Frequency of Tuberculosis among Negro Laundresses. H. D. King, New Orleans.

75. **Tuberculin in Treatment of Tuberculosis.**—Miller says that the great majority of cases of tuberculosis had better never be treated with tuberculin at all, but for certain other cases the selection of which should always be left to an experienced physician, the results appear excellent. In general, he says, the more suitable cases are those in which the disease has become localized in the system. This is best seen in cases of so-called surgical tuberculosis, that is, of bones, glands or joints, etc., and similarly in the more localized chronic cases of pulmonary tuberculosis. The injection of small increasing doses of tuberculin seems to influence favorably the course of the disease as evidenced by diminution of general symptoms with a corresponding improvement in general health, and, particularly, by diminishing the liability to relapse when the patient goes back to ordinary methods of life.

Another way in which tuberculin can be given is by what is known as auto-inoculation. If a patient with tuberculosis takes physical exercise or does physical work it is shown that there is produced a reaction in the blood, due to the absorption of the poison from the diseased area. This poison, to all intents and purposes, corresponds to the artificial tuberculin without the necessity of the hypodermic injections. This method is now in use in a number of places and good results have been reported. However, this method should never be carried out except in cases in which the patients are under the very strict supervision of expert physicians. The results reported from it are similar to those reported by the use of injections of tuberculin, and the type of cases in which it is employed is the same. Certain it is that the tuberculin and similar methods of treatment designed to act favorably in tuberculosis by influencing the resistance or immunity to the disease have a limited field of usefulness. In the first place the cases which are suitable for this treatment are but a small portion of the whole number. Second, the amount of increased resistance obtained is relative and not absolute. Any increased resistance or immunity to tuberculosis which tuberculin treatment may produce is very limited. Tuberculin is in no sense a cure for tuberculosis, but is simply an aid to the other generally accepted methods of treatment, such as good food, fresh air, and the proper regulation of rest and exercise.

Lancet-Clinic, Cincinnati

September 12, CXII, No. 11, pp. 277-304

83 Myoclonias—Paramyoclonus Multiplex. H. H. Hoppe, Cincinnati.
84 Examination of Policy Holders by Life Extension Institute. C. H. Castle, Cincinnati.
85 Graduates of Medical Department of University of Pennsylvania Who Have Taught or Practiced in Cincinnati. A. G. Drury, Cincinnati.

Medical Record, New York

September 19, LXXXVI, No. 12, pp. 489-530

86 Thyroid Deficiency. E. Hertoghe, Antwerp, Belgium.
87 Intratracheal Insufflation. B. M. Ricketts, Cincinnati.
88 Epidemic of Typhus Fever in Van, Turkey. C. D. Ussher, Van, Turkey.
89 Diabetes Mellitus Following Interval Operations of Bilateral Mastoidectomy and Unilateral Exenteration of Ethmoid, Sphenoid and Maxillary Sinuses. V. Dabney, Washington, D. C.
90 Modification of Crile Cannula. A. Kahn, New York.

Northwest Medicine, Seattle, Wash.

September, VI, No. 9, pp. 257-290

91 *Experiences with Radium in Treatment of Cancer and Other Morbid Growths. K. A. J. MacKenzie, Portland, Ore.
92 Ether Anesthesia. G. L. Closson, Seattle.
93 Nitrous Oxid and Oxygen Anesthesia. H. L. Geary, Seattle.
94 Local Anesthesia. T. Torland, Seattle.
95 *Sugar Solution by Proctoclysis in Postoperative Treatment. C. M. Barbee, Portland, Ore.
96 Jacksonian Epilepsy, Reference to Its Surgical Treatment. A. T. R. Cunningham, Spokane.
97 Use of Colored Lenses to Cut Down Heat Radiation and Neutralize Ultraviolet and Infra-Red Light Rays. F. F. Casseday, Portland, Ore.

91. **Radium in Treatment of Cancer.**—Although the range of MacKenzie's experience has been limited, he points with great satisfaction to the treatment of a considerable group of cases, which, treated by radium, have shown striking results, the best having been obtained in the treatment of malignant diseases, especially cancers. The complete list, however, includes also cases of sarcoma, rodent ulcer, angioma or nevi of different kinds, especially the prominent arteriovenous variety, pigmentary nevi, keloids and disfiguring scars, lupus, the tubercular form and lupus erythematosus, inveterate and chronic patches of skin disease, urethral caruncles, warts, moles and certain chronic neuralgias. In practically nearly all the cases treated, which have been selected with care, and apparent complete cure has been the result, and up to the present time no case has been encountered in which recurrence has taken place.

95. **Sugar in Proctoclysis.**—The results of Barbee's experience with sugar solution have been gratifying. Barbee says it is a valuable adjunct in treatment in which water is demanded and in which the stomach cannot be utilized for this demand. By careful observation and comparison in over 150 cases he is assured that postoperative shock is lessened, the circulation quickly equalized, vomiting diminished, thirst allayed, perspiration induced, kidney excretion increased, gas eliminated, ileus less common and, as in most of these cases in which the stomach cannot be utilized for several days, a valuable food element is constantly absorbed. Thus far he has met with only a few instances in which the patient did not satisfactorily absorb the solution. The most of these could be charged directly to faulty technic in the use of the "Murphy drip."

Sugar water is rapidly absorbed by the rectum, is practically non-irritant and seems to exercise a general stimulating effect. The strength of the solution used is 15 gm. of cane-sugar and 1 liter of water. It is administered by the (Murphy) drop method at the rate of 30 to 40 drops per minute. The rate may be increased or diminished according to the patient's needs for water, or according to the rate of absorption. This rate will use approximately 3 quarts of the solution in twenty-four hours. The approximate caloric value of the contained sugar is 200 large calories. Repeated urine examinations in many of the cases fail to show its presence in the urine. In two cases of gastro-enterostomy the solution ran continuously for seven days. Nourishment in no other form was given. The patients did not complain of the slightest hunger, kept their weights and no sugar appeared in the urine. These results lead Barbee to believe that the sugar administered by rectum is converted into glucose and utilized by the tissues.

The sugar water is started as soon as the patient is put into bed from the operating-table. If there be much shock, if the patient be deeply anesthetized or if vomiting, he is left flat until the position can be altered to a low Fowler, in which position proctoclysis is most successful. There are many conditions in which the patient must remain flat, but the great majority of cases may and should receive some elevation at the head. Within a short time the pulse increases in volume, the skin becomes warm and moist, followed by free perspiration, there is much less or no thirst, vomiting is lessened, kidney excretion increased and gas escapes. When these results are obtained and maintained, Barbee says, they are past postoperative shock and the fear of ileus. With a few exceptions these results follow the use of sugar solution by proctoclysis.

Ohio State Medical Journal, Columbus

September, X, No. 9, pp. 519-574

98 Thymic Asthma. H. J. Morgan, Toledo.
99 Professional Ethics; Professional Jealousy and Other Matters. H. E. Beebe, Sidney.
100 Full-Time District Physicians: How the Plan Operates in Cincinnati. J. H. Landis, Cincinnati.
101 Rupture of Urethra Following Fracture of Pelvis. C. M. Harpster, Toledo.
102 Prescription, Facing Lenses and After-Treatment. B. L. Millikin, Cleveland, F. K. Smith, Warren, and M. D. Stevenson, Akron.
103 Unique Fracture Dislocation of Hip. F. J. Schmoldt, Cleveland.
104 Definite Plan for System of "Health Supervision" of School Children in Ohio. P. B. Brockway, Toledo.

Pennsylvania Medical Journal, Athens

September, XVII, No. 12, pp. 933-1006

105 Early Diagnosis and Treatment of Syphilis. B. J. Wetherby, Wilkes-Barre.
106 State Tuberculosis Dispensaries. A. P. Francine, Philadelphia.
107 State Sanatoria for Tuberculosis. W. G. Turnbull, Cresson.
108 Multiple Papillomata of Vocal Cords. N. P. Stauffer, Philadelphia.
109 Study of Coagulation Time of Blood in Several Species. G. M. Dorrance, Philadelphia.
110 Case of Osteo-Arthritis of Spine. A. H. O'Neal, Wayne.
111 Opium Habit. D. J. Hetrick, Harrisburg.
112 Answers to Some Practical Questions on Use of Pituitary Extract in Obstetrics. J. O. Arnold, Philadelphia.
113 Experience with Crotalin at Oakburne Epileptic Colony. N. S. Yawger, Philadelphia.

Southern Medical Journal, Mobile, Ala.

September, VII, No. 9, pp. 687-764

114 Malaria and Blackwater Fever in Southern Rhodesia. W. C. Gorgas, Ancon, Canal Zone.
115 *Arterial Hypertension and Hypotension in Medicine and Surgery. H. H. Roberts, Lexington, Ky.
116 Importance of Early Recognition of Paresis. J. K. Hall, Richmond, Va.
117 Amebic Dysentery. J. Kenan, Selma.
118 Intravenous Administration of Salvarsan in Babies. L. W. Elias, Asheville, N. C.
119 *Verrucose Dermatitis. H. H. Hazen, Washington, D. C.
120 Supreme Civic Law. O. Dowling, New Orleans.
121 Innocent Criminal. A. H. Cook, Hot Springs, Ark.
122 Obstetric Management from View Point of General Practitioner. I. Kimbell, Auburn.
123 Cesarean Section in Eclampsia. H. R. Shands, Jackson, Miss.
124 Diagnosis of Fibroid of Uterus and Importance of Early Surgical Interference. A. W. Ralls, Gadsden.
125 *Diaphragmatic Hernia. Report of Case. S. McGuire, Richmond, Va.
126 Factors Necessary to Make Correct Surgical Diagnosis. E. D. Newell, Chattanooga, Tenn.
127 Early Operative Treatment for Cranial Lesions. F. Y. Cronk, Guthrie, Okla.
128 Inflammatory Pathology of Tonsil. B. C. Willis, Richmond, Va.
129 Enucleation of Eyeball with Implantation of Gold Ball. M. H. Biggs and H. Norris, Rutherfordton, N. C.

115. **Arterial Hypertension and Hypotension.**—In the management of hypertension cases Roberts disapproves of the use of vasodilators. If the tension is above the danger line and it is imperative that immediate action be taken to prevent hemorrhage or acute dilatation, then, he says, there is nothing which will give more immediate or lasting effect than to resort to venesection. In all cases with marked hypertension the patient should be put to bed, and the eliminative forces should be increased and all fluids restricted. A low protein diet should be ordered and all those conditions which are intensifying the hypertension actively treated. For the management of those cases of hypertension in which the danger line has not been crossed, a select diet which is nutritious, but low in animal proteins, should be given. Massage, selective hydrotherapy and a systematic form of exercise, preferably taken in the open air, should be advised.

119. **Verrucose Dermatitis.**—Surgical treatment in Hazen's opinion is undoubtedly the quickest way of curing the condition. Salves and ointments are absolutely useless, except to prevent the spread of the malady and to allay itching. So far as Hazen's experience goes neither radium nor the Roentgen ray has helped, although he admits that either of these two remedies might prove beneficial. The best treatment is probably thorough curettage, under a general anesthetic, and cauterization with either the actual cautery or the acid nitrate of mercury. Preliminary curettage is to be preferred, because one can tell by the "feel" of the curet about how much tissue it is necessary to remove.

125. **Diaphragmatic Hernia.**—Following a stab wound in the posterior axillary line about the third intercostal space on the left side of the chest, McGuire's patient developed a diaphragmatic hernia. The history, symptoms, physical examination and roentgenographic findings all pointed to diaphragmatic hernia, with escape of practically the entire stomach into the left thoracic cavity. A very dense and firm adhesion was found between the cardiac end of the stomach and the posterolateral surface of the chest wall just opposite the stab wound. This was peeled loose after considerable effort and there was at once the escape of some stomach contents. The stomach was delivered through the opening into the thorax and an incision 3 inches long found on its anterior surface beginning near the esophageal opening and extending in the direction of its greater curvature. The edges of this incision did not bleed and showed evidences of cicatrization, hence it seems reasonable to believe that the rupture of the diaphragm and hernia of the stomach resulted from a blow and injury inflicted on the abdomen prior to the cutting, and that when the stab wound was made in the third intercostal space the vulnerating instrument cut the stomach which was already in the left thoracic cavity. The rupture in the diaphragm was about 4 inches in length, beginning near the esophageal opening and extending through the left leaf toward the sternum. The patient recovered.

Washington Medical Annals

September, XIII, No. 5, pp. 279-334

130 Early Diagnosis and Prevention of Cancer. T. Abbe, Washington, D. C.
131 Case of Intestinal Adhesion. I. S. Stone, Washington, D. C.
132 Hay-Fever. D. G. Smith, Washington, D. C.
133 Case of Voluntary Displacement of Eye. A. H. Kimball, Washington, D. C.
134 Hairballs. D. S. Lamb, Washington, D. C.
135 *Postoperative Leukocyte Count, with Especial Reference to Appendicitis. C. S. White, Washington, D. C.
136 Case of Syphilitic Multiple Sclerosis; Diagnosed Clinically in Spite of Negative Laboratory Tests. T. A. Williams, Washington, D. C.
137 *Relation of Systolic and Diastolic Blood-Pressure in Diagnosis of Certain Acute Circulatory Conditions. H. H. Newman and M. B. Fischer, Washington, D. C.
138 Faith Cures and How They Act, Contrasted with Principles of Scientific Mental Healing. Case Reports. T. A. Williams, Washington, D. C.

135. **Postoperative Leukocyte Count with Reference to Appendicitis.**—After catarrhal appendicitis or mild infections, with removal of the source, White says, we may expect an initial leukocytosis, followed by a gradual and permanent decline in the absence of complications. After a mild infection and the cause removed, a secondary infection of a small area or a transient toxemia is noted by a moderate leukocytosis, usually present after the first week of the illness. Secondary infection of the peritoneum with good resistance shows an early and high increase of the leukocytes and will continue for an extended period; the pulse and temperature alone are misleading, but the leukocyte count as an adjunct gives much better insight into the mischief within the abdomen. With general peritonitis infection, with a constant low count or a declining leukocytosis, the prognosis is very bad.

137. **Systolic and Diastolic Blood-Pressure in Circulatory Conditions.**—Newman and Fischer believe that a fall in blood-pressure associated with decreased pulse pressure is indicative of heart failure; whereas a fall in pressure associated with increased pulse pressure is indicative of hemorrhage or shock. The cases they have observed seem to adhere to their theory. Slight changes in the systolic and diastolic relation are not to be relied on. Cases should be observed frequently in order that the state of the circulation be understood. Knowing the previous state of the circulation, a fall in pressure should be carefully studied, in order that proper interpretations of the changes be made. The authors urge that the systolic and diastolic blood-pressure be taken on all surgical cases, before, during and after the operation. Such findings, in their opinion, might be of service in diagnosis in circulatory crises. They further urge that blood-pressure readings be made on all cases likely to have acute circulatory conditions.

West Virginia Medical Journal, Wheeling

September, IX, No. 3, pp. 75-108

139 Newer Concepts of Gall-Bladder Disease. W. W. Babcock, Philadelphia.
140 Diabetes Insipidus. Report of Case. J. W. Preston, Roanoke, Va.
141 Metastatic Infections of Joints—Etiologic Factors, Diagnosis and Treatment. E. F. Peters, Maybeury.
142 Skiagraphy and Interpretation of Negative. R. H. Pepper, Huntington.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

September 5, II, No. 2801, pp. 421-456

1 Educational Number.

Edinburgh Medical Journal

September, XIII, No. 3, pp. 193-288

2 *Pathology and Etiology of Duodenal Ulcer. D. P. D. Wilkie.
3 *Bacteriologic Study of Tuberculosis of Lymph-Nodes in Children. A. P. Mitchell.
4 Healing Process of Infantile Bronchial Lymph-Node Tuberculosis. E. Rist.
5 *Bronchogeneous, Placentogeneous, Dermatogeneous, and Enterogeneous Infection with Tuberculosis in Infancy. C. von Pirquet.
6 *Gluteal and Crural Types of Fibrositis: Their Relationship to Spurious and Genuine Sciatica. L. J. Llewellyn and A. B. Jones.
7 Doctors in Some Recent French Plays. J. B. Adams.
8 Medicolegal Problem: Visual Conditions Necessary for Shooting. W. G. Sym.
9 Case of Dyspituitarism. A. W. Falconer.
10 Cesarean Section in Primipara with Ovarian Cyst. P. Leighton.

2. **Pathology and Etiology of Duodenal Ulcer.**—Although as a rule readily diagnosed, Wilkie says, a chronic duodenal ulcer may occasionally exist and give rise to none of the characteristic symptoms, the first evidence of such a "silent" ulcer being sometimes its perforation. "Silent" duodenal ulcers are met with most frequently in the subjects of arteriosclerosis, and are found for the most part on the posterior wall of the duodenum. Some toxic or irritative factor, usually within the abdomen and most frequently associated with the colon or appendix, is found in a large proportion of cases of chronic duodenal ulcer.

Wilkie suggests that probably many acute duodenal ulcers are primarily follicular ulcers from the breaking down of inflamed lymph follicles. Whatever be the primary cause of a gastric or duodenal ulcer, spasm of the muscular coats of the viscus is an important factor in determining its chronicity. The situation of the opposing ulcers on the anterior and posterior walls of the duodenum on the boundary zone of the areas supplied by the anterior and posterior branches of the supraduodenal artery suggests that a common vascular deficiency rather than a contact infection accounts for the peculiar tendency to chronicity and recurrence.

This vascular deficiency, Wilkie believes, may be due to arteriosclerosis, but probably it is usually due to spasm of the muscular coats of the duodenum induced by a slight local anemia consequent to strain on the supraduodenal vessels, this muscular spasm being favored by the increased vagotonus and the irritable condition of the autonomic nervous system which exists in such cases. The sex incidence of duodenal ulcer is explained by Wilkie on anatomic grounds. The relatively high pylorus and short fixed duodenum of the male allows of its vascular supporting ligament, the hepatoduodenal ligament, being exposed to strain, which in the female, with her relatively low pylorus and lax duodenum, is borne by the left border of the gastrohepatic omentum and lesser curvature of the stomach. The fixity of the male duodenum further predisposes to kinking at the first duodenal angle, and thus to an unduly long exposure of its first part to the acid chyme from the stomach, undiluted by bile or pancreatic juice, the regurgitation of which is impeded.

3. **Tuberculosis of Lymph-Nodes in Children.**—The total number of cases examined by Mitchell was twenty-nine, all being children under 12 years of age. At each necropsy particular attention was directed toward the three chief groups of lymph-nodes—the cervical, bronchial and mesenteric. Occasionally the tonsils were also examined. Cultures were isolated from twelve cases. Eight cases yielded cultures of human tubercle bacilli; in four cases they were of the bovine type. In the four bovine cases there was more extensive and advanced caseation of the mesenteric glands than of any other group of glands.

The bronchial and mesenteric glands of eighteen children who presented at necropsy no visible lesions of tuberculosis were tested on guinea-pigs for the presence of tubercle bacilli. In thirteen of these cases the cervical glands, and in two the tonsils, were also tested. Tubercle bacilli were demonstrated to be present in a single case in the bronchial glands of a child aged 4 years; the bacilli were of the human type. Of eighty cases of tuberculous cervical glands in children examined by Mitchell the bovine bacillus was present in seventy-one instances (88 per cent.), and the human bacillus in nine (12 per cent.). Without exception, the cases were those of children 12 years of age and under. The maximum incidence occurred during the second year of life. Most of the cases were brought to hospital on account of a lump in the neck, which had been present for a varying period. The average duration of the illness before surgical advice was sought was seven and a half months. A careful search was made in every case of the existence of pulmonary tuberculosis in the parents and other members of the household.

As regards the bovine cases, it seems more than a coincidence that in not a single case was there a history of pulmonary tuberculosis in other members of the family. In sixteen cases, however, one or more of the children in the respective families were affected with various forms of surgical tuberculosis. Out of eight cases of abdominal tuberculosis in children observed, seven have proved to be of bovine origin and one of human origin. All the children were under 12 years of age, and had been fed on raw milk. It is interesting to note that in the human infection the father of the patient suffered from chronic pulmonary tuberculosis.

5. **Infection with Tuberculosis in Infancy.**—For the first year of life, von Pirquet says, the bronchogeneous infection with tuberculosis is by far the most frequent way of entry (about 95 per cent. of all infections). The enterogeneous infection is not important—at least, not in Austria (1 per cent. to 2 per cent. of all infections). A placentogeneous infection of the fetus is a rarity, as is also stomatogeneous and dermatogeneous infection. Prophylaxis of infant tuberculosis has chiefly to deal with the separation of the nursling from the coughing adults.

6. **Gluteal and Crural Fibrositis.**—In attempting to differentiate the spurious sciatic pains of gluteal or crural fibrositis from the true sciatica, Llewellyn and Jones state, attention should be paid to the following points: 1. The pain is referred not to the sciatic nerve, but to the muscular and fascial structures. 2. There is an absence of tenderness over the nerve trunk and also of sensory paresthesia referred to its area of distribution. 3. The pain, too, differs from sciatica in that it

is less radiating, partaking rather of a diffuse feeling of tenseness or stiffness referred more especially to the fibrous attachments of the affected muscles or aponeuroses. 4. The pain in uncomplicated gluteal fibrositis is less severe, though more constant, and lacks, moreover, the tendency to paroxysmal exacerbation so typical of true sciatic neuralgia. 5. The pain in fibrositis is evoked or aggravated by the particular movements subserved by the affected muscles. Thus, in the case of the gluteus maximus, difficulty in rising from a sitting posture or walking upstairs, and in the gluteus medius internal rotation of the thigh, are the movements entailing most discomfort. 6. On the objective side nodules or infiltrations are to be detected in the implicated muscles of fascia.

Glasgow Medical Journal

September, LXXXII, No. 3, pp. 161-239

11 Practical Points in Abdominal Surgery. T. K. Dalziel.
12 Case of Complete Auriculoventricular Heart-Block. G. A. Allan.
13 Six Cases of Lumbar Nephrectomy and One Case of Resection for Renal Varix. D. Newman.

Indian Medical Gazette, Calcutta

August, XLIX, No. 8, pp. 297-336

14 Anatomic Terminology. C. Milne.
15 Segregation and Kala-Azar. W. M. Young.
16 *Operation of Election for Radical Cure of Inguinal Hernia. E. A. R. Newman.
17 Prevention of Malaria in Troops of Indian Empire. P. Hehir.
18 *Treatment of Cholera by Intraperitoneal Injection of Iodin. J. J. A. Brachio.
19 Cases of Intestinal Obstruction. C. Brodribb.
20 Case of Suspected Addison's Disease Aggravated by Ascaris Lumbricoides and Hysteria. P. S. Bedell.
21 New Pedicle Suture. T. H. Foulkes.
22 Case of Absence of Uterus. B. K. Chowdry.

16. **Radical Cure of Hernia.**—The fat and subcutaneous tissue having been divided and all bleeding points secured, Newman splits the aponeurosis of the external oblique parallel to its fibers throughout the length of the wound, including the intercolumnar fascia at the inner angle. The wall of the supposed sac, when found, is held up at any point with a pair of dissecting forceps and carefully nicked with the knife. The opening is then enlarged longitudinally for an inch or more with the scissors. In the funicular variety of hernia with the forefinger inside the sac and the sac wall held between it and the thumb, the sac is most rapidly and generally quite easily, separable from the apex to neck by wiping the tissues of the cord off it with a gauze swab. The cord proper is but little interfered with and it is usually unnecessary to lift it more than partially from its bed.

In the tunical variety the separation is more difficult because the vas deferens and spermatic plexus of veins are so intimately adherent to the posterior wall of the sac. The same procedure is followed, namely, wiping with a gauze swab, but along the adherent line a few touches with the knife are necessary. When the more easily separable portions of the funicular part of the sac have been freed, it is cut through transversely, thus separating it from the scrotal portion. The cut margin of the funicular portion is then clipped at intervals with forceps and held up, while the separation of the posterior adherent portion is completed right up to the internal ring.

In the funicular variety the sac after isolation is twisted into a cord at its neck, transfixed, ligatured and the redundant portion cut off. The stump is then drawn up into the abdominal cavity by passing the ends of the ligature in turn through the internal ring and the abdominal wall and tying them externally, the knot lying on the aponeurosis of the external oblique. In the tunical variety occlusion by ligature is usually impossible and a purse-string suture must be passed right around the neck and tied. This may be varied by passing the suture in case the sac is adherent, then crossing the ends and occluding the remainder of the neck by ligature. The redundant portion is next cut off and the stump drawn up as above described. Any remains of the funicular portion must be carefully removed. The scrotal portion can either be left—with or without occlusion by ligature—or removed separately. As this adds considerably to the length of the operation, Newman usually leaves it, unless the sac is thin and easily separable, in which case it is stripped off early in the operation.

The gap in the lower abdominal wall at the site of the inguinal canal is closed by pulling the transversalis and internal oblique muscles down over the front of the cord and suturing them to the back of Poupart's ligament with two or three square or mattress sutures of stout silkworm gut, placed in order from the internal to the external ring and finally tied in this order. The outermost suture should obliterate the internal ring, and the innermost should close the external ring securely, without unduly constricting the spermatic vessels. Lastly, the cut margins of the external oblique aponeurosis are united by a continuous flax-thread suture. The skin wound is then sealed with a pad of aseptic gauze and a firm spica bandage applied.

18. **Use of Iodin in Cholera.**—Being encouraged by the effects of iodin in a few isolated cases of cholera, Brachio tried its effects more fully in an epidemic of rather a virulent type. The results were gratifying. He divided his experiments into three methods, namely: 1. A mixture consisting of tincture of iodin, 10 ♏, dilute sulphuric acid 10 ♏, tincture of digitalis 10 ♏, water 1 ounce. One ounce for an adult every four hours. 2. A pill consisting of iodin, ¼ grain, extract gentian, q. s.; one pill for an adult three or four times a day. 3. An intraperitoneal injection, consisting of iodin, ¼ grain, potassium iodid, ¼ grain, distilled water, 20 ♏. Twenty minims constituted one complete treatment for an adult. Having scrubbed a small portion of the skin of the abdomen just above the cecum with a piece of antiseptic wool, and painting the part with tincture of iodin, Brachio injected 20 drops of the solution with an all-glass hypodermic syringe and needle, by gripping and pulling up the abdominal wall as high as possible and driving the needle at right angles to the wall right down to the hilt and squirting its contents into the cavity.

Of all three methods the injection impressed him most favorably. In almost all the cases the treatment was supplemented with a free use of epinephrin by dropping the solution on the tongue, as it was quickly absorbed and nothing was lost in the event of vomiting. The iodin in either the mixture or injection form had a marvelous effect on the vomiting. In all the cases Brachio gave only one injection. He suggests that perhaps a second might have saved the lives of some who died, but unfortunately he was not able under the circumstances to give this as he had to move on to another village and was only able to come back to the last perhaps on the second or third day. One of the cholera doctors injected sixteen patients; of these ten recovered. Another reported having treated fifty-two patients, of whom forty-five recovered.

Lancet, London

September 5, II, No. 4749, pp. 637-682

23 Dysentery. F. M. Sandwith.
24 *Bullet Wounds in War. W. G. T. Posnett.
25 Some Signs and Symptoms of Hypothyroidism in School-Children. J. L. Dick.

24. **Bullet Wounds in War.**—From the cases quoted by Posnett it is seen that bullets may pass through the most vital tissues without doing any permanent injury. In the treatment of bullet wounds, Posnett says, it must be remembered that there often is great initial shock. The soldier frequently goes into battle in a hungry condition and is more or less tired by marching, and the receipt of a severe injury while in this state is accompanied by shock to the whole system. His mental state while engaged with the enemy also probably contributes its share. The impact of a bullet against the body is very severe. One patient who was struck through the right ilium told Posnet that he felt as if he "had been hit by a crowbar wielded by a giant," and that he had been thrown three or four yards out of the saddle.

An empty stomach is frequently the salvation of a wounded soldier who has been hit in the abdomen; a wound of the stomach or intestines seems to close rapidly without any trouble and so long as there has not been leakage of gastric

or intestinal contents the patient will probably recover in a short time, but if leakage takes place symptoms of localized peritonitis may be expected, which will require a laparotomy. Wounds of the bladder usually require a suprapubic cystotomy, as they do not heal readily and generally leak into the surrounding tissues. A clean wound of the kidney seldom requires any interference, but Posnett has had to remove a kidney for a wound which cut the ureter across about 2 inches below the renal pelvis. What may be called local shock is a condition sometimes encountered in wounds of the soft parts. The great velocity of the bullet seems to shake up the tissues for some little distance around the wound, with the result that there is a feeling of considerable stiffness in the part for several days, and nerves in the immediate neighborhood, although not touched by the bullet, may be the seat of more or less neuralgic pain for a considerable time. Tissues in this condition are not favorable for operative proceeding, as there is a tendency to delayed healing. It is better, if possible, to wait a few days for this local shock to pass off before proceeding to operation.

Revue Médicale de la Suisse Romande, Geneva

August, XXXIV, No. 8, pp. 501-560

26 *Mind-Blindness: Apraxia. Long.
27 *Mortality of Whooping-Cough. (Coqueluche.) A. D'Espine.

26. **Apraxia.**—Long reviews the history of the conception and the literature of this subject and reports in detail a case in a spinster of 66. There is both lack of proper apprehension of the true nature of things and inability to perform certain acts even when the motion is done before her eyes and she has only to imitate it. She has therefore both the soul-blindness and the motor apraxia. By a series of deductions and eliminations the lesion responsible for the trouble can be localized. Two years ago the patient developed symptoms suggesting foci of hemorrhage in the brain but there was no tendency to hemiplegia or hemi-anesthesia, hemi-anopsia or agnosia. Aphasia and apraxia were the only symptoms, and this testified to the comparatively trivial nature of the lesion and located it between the zone of Rolando and the occipital lobe.

27. **Whooping-Cough.**—D'Espine states that in 1913 there were 46 infants with whooping-cough in his service; most of them were bottle-babies and 9 were between 2 and 6 months old. Two succumbed to pneumonia already installed when the children were first brought to the clinic. Another died of tuberculosis and still another, enfeebled by chronic bowel trouble, died of general debility. The others all recovered; the mortality was thus 8.6 per cent. although, strictly speaking, the whooping-cough can scarcely be held responsible for any of the deaths in this series. The mortality from whooping-cough throughout Switzerland is comparatively high. Statistics for the decade ending in 1910 show the proportion of the general mortality to be 1.10 per cent. from whooping-cough; 1.05 from diphtheria; 0.91 from measles; 0.3 from typhoid and 0.27 per cent. from scarlet fever. The whooping-cough mortality has not declined in Switzerland in recent years while in England it has dropped to one-half the former figure, but it is still four times that of Switzerland. The statistics for other countries are compared with these. All testify that whooping-cough is a serious disease and that it runs a more serious course in institutions than in private homes. Children with whooping-cough should be kept at home and given outpatient care as needed. Another conclusion from the data presented is that open-air treatment should be the rule for whooping-cough, either in the home or hospital or in an open shelter. A third conclusion is that strict isolation is necessary: individual cubicles with special nurses until the diagnosis is certain, and then isolation in a special ward.

Archiv für klinische Chirurgie, Berlin

August, CV, No. 2, pp. 277-527. Last indexed Aug. 22, p. 711

28 *Puncture of the Corpus Callosum in Treatment of Epilepsy, Idiocy and Allied Conditions. (Weitere Erfahrungen mit dem Balkenstich.) A. Stieda.
29 *Resection of Thymus for Simple and Exophthalmic Goiter. (Thymusreduktion bei Basedow und Struma.) H. v. Haberer.
30 Radiotherapy. (Probleme der Therapie mit radioaktiven Substanzen.) Habs.
31 Exostosis on Heel or Elbow. (Spornbildung am Calcaneus und Olecranon.) F. Rolly and O. Appelt.
32 Origin of Free Bodies in the Knee. (Zur Kenntnis der Entstehung von freien Körpern im Kniegelenk.) A. Troell.
33 Pathology of the Shoulder after a Contusion. (Bedeutung des Akromialgelenks bei subcutanen Schulterverletzungen.) R. Sievers.
34 *Surgical Treatment of Pulmonary Tuberculosis by Resection of Ribs and Section of Phrenic and Intercostal Nerves. P. L. Friedrich.
35 *Operative Treatment of Traumatic Injury of Spine. (Zur Chirurgie der Verletzungen der Wirbelsäule und des Rückenmarks.) Borchard.
36 *Prophylaxis of Peritoneal Adhesions. (Neue Experimente zur Frage der Vermeidung peritonealer Adhäsionen.) E. E. Pribram.
37 *Operative Treatment of Internal Hydrocephalus by Diversion of Cerebrospinal Fluid into the Abdominal Cavity or Pleura. B. Heile.
38 Implantation of Nerve in Muscle. H. Heineke.
39 Practical Utility of Abderhalden's Serodiagnosis of Cancer. K. Fritsch.

28. **Puncture of the Corpus Callosum in Treatment of Epilepsy, Idiocy, etc.**—Stieda describes the experience at the Halle clinic with puncture of the corpus callosum which has been done nineteen times on seventeen patients. The effect realized was far from brilliant but the cases were all old inveterate ones. Done earlier, he is convinced that better results will be obtained, and that there is a future for this simple, brief and harmless operation which does not injure the brain nor entail shock and can readily be done under local anesthesia. The technic was that followed by A. von Bramann. (See THE JOURNAL, Jan. 14, 1911, p. 162.) When the dura was opened there was little or no pulsation evident in the brain, but after the puncture and release of a few c.c. of fluid pulsation returned, showing how conditions in regard to the circulation are favorably modified by it. Headache and dizziness subsided. In one case of puberty epilepsy the attacks became much milder after the corpus callosum had been punctured and then there was an interval of two years nearly entirely free from seizures. They then recurred in a mild form but were banished almost completely again for four years by a repetition of the puncture. In one case of epilepsy since childhood with hydrocephalus and imbecility, the seizures did not recur for several weeks after the puncture and since then they have been much less numerous and much milder. In another very severe case the seizures stopped abruptly for six months; they then returned, but were banished anew for a time by repeating the puncture. The little operation did no harm in any instance and more or less benefit was realized in all but two cases.

29. **Operations on the Thymus for Goiter.**—Haberer has resected the thymus in twenty-one cases, including eight cases of exophthalmic goiter, seven of ordinary goiter with unduly large thymus and a case of severe myasthenia. In all but two cases the thyroid was resected too. The post-operative improvement in the exophthalmic goiter cases was particularly striking and justifies reduction of the thymus whenever it is found unduly large at the operation on the thyroid. His experience has been that a combined partial operation on both the thyroid and the thymus gives better results than on either alone. The postoperative course is better when the thymus has been resected than when the thyroid alone is resected and the unduly large thyroid left undisturbed. Reduction of the thymus does not seem to entail any untoward consequences, even for the growing organism.

34. **Operative Treatment of Pulmonary Tuberculosis.**—Friedrich has applied various surgical measures in treatment in forty-five cases of pulmonary tuberculosis and describes his technic and the results, comparing them with the literature on the subject. He advocates operative treatment for all cases in which artificial pneumothorax is indicated but cannot be applied on account of adhesions or other reason. He resects the ribs from the rear, cutting close to the spine, and insists that the mobilization should include the wall over the entire lung on the side affected even if only one lobe is

involved, if operative treatment is attempted at all. He is rather skeptical as to benefit from compression of the lobe by a filling. Resection of the phrenic nerve entails a permanent mutilation which he thinks is unnecessary; the same therapeutic results can be obtained by merely crushing the nerve. This permits it to recuperate later. He has done this in eight cases but in six the diaphragm was already bound down with adhesions so that thus modifying its innervation had no effect on its excursions.

Resection of the intercostal nerves on animals produces effects analogous to those of exclusion of the phrenic nerve, the lung shriveling up thereafter. The same procedure was applied in a few cases of pulmonary tuberculosis, which he describes with illustrations. He pulled out all the intercostal nerves on that side, after blocking the nerve trunk, and found it a comparatively simple and easy procedure. In one case he extracted four nerves and resected five ribs. The results to date are encouraging. In conclusion Friedrich extols ample resection of ribs from the rear in one or more sittings as having won an important post in the campaign against extensive unilateral tuberculous disease.

35. **Injuries of the Spine.**—Borchard reports the successful reduction and complete cure of a forward dislocation of the first lumbar vertebra. Bladder and rectum were paralyzed and also the legs, and the knee-jerk was abolished, but the symptoms indicated that the spinal cord was suffering from pressure alone, and this was corrected by exposing and pulling the vertebra back into place. Roentgenoscopy showed that the bones were intact. He sutured together with wire the spinous processes of the first and second vertebrae after interposing a pedunculated flap of ligament and bone. Good results also followed surgical treatment in two other cases of injury of the lower spine, but in one it proved impossible to ward off cystitis, to which the patient succumbed. In this case a sliver of bone had pierced the dura causing merely paralysis of bladder and rectum. These experiences justify operations on the spine when there seems to be any chance to believe the spinal cord can be relieved thereby from injury from pressure or even from disturbance in the local circulation. The only absolute contra-indications are signs that the spinal cord has been injured entirely across. In his cases persistence of sensation to some extent in the legs testified that part of the spinal cord was still functioning. The longer the pressure lasts, naturally, the severer the injury.

36. **Prophylaxis of Peritoneal Adhesions.**—Pribram injected the vitreous body from the eyes of calves in his experiments on the peritoneum of rabbits, dogs and cats after introducing a small sponge into the abdominal cavity or irritating the serous membrane with a magnesium powder or tincture of iodin. When the abdomen was opened three weeks later the controls all had developed numerous adhesions. There was nothing of the kind in the animals whose abdominal content had been lubricated with the injected vitreous substance, except that close to the sponge were a few insignificant adhesions and adhesions had formed when the irritation had been exceptionally intense. The vitreous body can be easily sterilized and keeps for two or three days. The peristaltic movements distribute it throughout the intraperitoneal cavity and it coats the intestines as with thick slime, and causes no disturbances even on repeated injections.

37. **Diversion of Fluid in Hydrocephalus.**—Heile reports the case of an intelligent boy of 8 with internal hydrocephalus causing contracture and paralysis of the legs. Puncture of the corpus callosum and lumbar puncture induced great improvement but it was only transient. He therefore implanted a stretch of a vein to drain the lumbar dural cavity into the abdominal cavity. This worked finely for a time but then the vein collapsed and he implanted a rubber drain on the other side and this fully answers the purpose. The child's contractures have subsided and from being a helpless paralytic since his birth now, five months since the operation, he is learning to walk and can get about without help. The rubber tube is 5 mm. in diameter; it leads from the lower end of the spinal dural sac to the abdominal cavity in the triangle of Petit, above the ilium, passing between the external and internal oblique muscles.

It is important in hydrocephalus to ascertain the point where there is the greatest accumulation of fluid. This proved in a case of external hydrocephalus to be in the fourth ventricle, and he diverted the excess of fluid into the intrapleural space by means of an implanted rubber tube. In order to reduce friction from the tube in the pleura he slipped over the lower end a segment taken from the living jugular vein nearby. The choked disk, headache and vertigo have entirely subsided. In both cases the tube healed in place without reaction. The benefit in the first case during the five months to date has surpassed, he says, anything yet realized in treatment of internal hydrocephalus. The technic in each case is shown with illustrations.

Berliner klinische Wochenschrift

August 3, LI, No. 31, pp. 1445-1492

40 *Myoma and Pregnancy. (Uterus myomatosus gravidus III mens.) L. and T. Landau.
41 Treatment of Tuberculosis According to Friedmann's Method; Twenty-Two Cases. C. Klienеberger.
42 *Salvarsan and Latent Microbism. C. Gutmann.
43 Epithelium-Proliferating Action of the Amino-Azobenzols. L. Martinotti.
44 Radium Treatment of Cancer. (Weitere Erfahrungen in der Radiumbestrahlungen maligner Geschwülste.) Weckowski.
45 Urobilinuria and the Diazo Reaction in Typhus and the Diplobacillus Exanthematicus. M. Rabinowitsch.

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46 *Contracture Following Trauma of Distant Joint. (Reflexkontraktur steifgehaltener Gelenke.) A. Tietze.
47 *Friedmann's Treatment of Tuberculosis. M. Wolff.
48 *Helminths and Appendicitis. (Sind die Würmer, besonders die Oxyuren, direkt oder indirekt schuld an der Appendicitis?) L. Aschoff.
49 Gunshot Wound of Spleen Patched with Omentum. (Milzschuss, durch freie Netztransplantation geheilt.) R. Mühsam.
50 Sterilization of the Hands. Huntemüller and B. Eckard.
51 *Histology of Carcinoma after Radiotherapy. F. Heimann.
52 Technic for Radiography of the Appendix. A. Henzelmann.
53 *Relation of Atypical Gout to Asthma and Pulmonary Tuberculosis. A. Mayer.
54 Humbug "Second Sight." (Die "Hellseher," ihre Tricks und ihre Opfer.) R. Meyer.

August 17, No. 33, pp. 1537-1568

55 *Fatal Case of Bovine Tuberculosis in Man. H. Beitzke.
56 Unfavorable Experiences with Friedmann's Treatment of Lupus; Seven Cases. Starke.
57 Combination Salvarsan-Mercury Treatment of Syphilis. W. Scholtz.
58 Importance of the Recess Shadow in Roentgenoscopy of the Stomach. (Diagnostische Bedeutung des Nischensymptoms bei der radiologischen Magenbetrachtung.) Strauss.
59 *Early Differentiation of Gastric Ulcer and Cancer. (Zur Diagnose der beginnenden sekretorischen Insuffizienz des Magens.) M. Ehrenreich.
60 Postdiphtheric Polyneuritis in Physician, with Pains, Ataxia and Paralysis; Unable to Practice for Nine Months. P. Friedlaender.
61 Age of Human Embryos in Connection with Last Menstruation. H. Triepel.

August 24, No. 34, pp. 1569-1588

62 *Practical Suggestions for Battle-Field Surgery. (Praktische Winke für die Chirurgie im Felde.) Franz.
63 Torsion of Omentum Including Loop of Intestine. (Netztorsion.) K. Fritsch.
64 Antiperistalsis as Result of Adhesions. (Rückfluss und röntgenologische Antiperistaltik des Duodenums als Folge von Adhäsionen.) Ehrmann.
65 Distribution and Elimination of Radio-Active Substances. (Verteilung und Ausscheidung radio- aktiver Substanzen.) J. Plesch.
66 Action on the Lungs of Thyroid Extract. (Beeinflussung der Lungen durch Schilddrüsenstoffe.) B. Zondek and W. Frankfurther.

40. **Myoma and Pregnancy.**—Landau thinks that physicians as a rule are too apt to regard myomas in the uterus as of comparatively little moment. In a case reported in detail a physician consulted by a young woman contemplating matrimony advised her that the uterus was in such a myomatous condition that pregnancy was out of the question and she would have to tell her fiancé this, but otherwise she need not worry. This idea that pregnancy is impossible in an extremely myomatous uterus and that the sterile are inclined to myomas must be abandoned. On the other hand, the numerous apparently normal deliveries with myomas and

the cases of successful enucleation of myomas during or after delivery show that the complication of a pregnancy with myomas is not very much to be dreaded. In the present case the woman became pregnant immediately after her marriage and the myomatous uterus was amputated at the third month. It weighed nearly 12 pounds. Landau adds that all recovered of his fifty-one patients requiring operative treatment of a myomatous pregnant uterus, and that the mortality in his total 544 cases of uterine myoma was 1.8 per cent.

42. **Casual Infection Enhances Toxic Action of Salvarsan.**—Gennerich and others have called attention to the necessity for refraining from giving salvarsan if the patient is suffering from a febrile infectious process anywhere or has just recovered from such infection and bacterial toxins are still circulating in his blood. Gutmann emphasizes the necessity for caution in this respect, especially since Yakymoff has found that mice given an intravenous injection of minute amounts of the endotoxin of the colon bacillus and then treated with salvarsan showed that the toxicity of the salvarsan had been enhanced nearly threefold by the preliminary treatment. The toxicity was enhanced eightfold when the mice had been mildly infected with trypanosomes, while stronger infection with trypanosomes enhanced the toxicity fifteenfold. The toxicity was most pronounced when the trypanosomes were still circulating in the blood. These experiences warn decidedly against injecting salvarsan unless several days have elapsed after a febrile infectious process. Gutmann warns that trouble may be anticipated if the salvarsan is injected during the incubation phase of an infectious process or during a stage of latent microbism as he calls it. Only by careful determination of the fact that the patient is free from bacterial infection, latent or otherwise, can we be certain to avoid danger from this superposed toxic action and influences. If a febrile acute infection develops during a course of salvarsan treatment, he advises to wait at least a week or two before going on with the salvarsan. When the salvarsan is resumed, he insists on the necessity for commencing treatment anew with a very small tentative dose to test the patient's susceptibility before going on with the course. He describes four cases in which there was unsuspected latent microbism when the salvarsan treatment was commenced, follicular tonsillitis developing after a day or so or ovarian trouble flaring up, and in each case the salvarsan was followed by a serious general reaction, chills, fever, headache, somnolency, etc. Suspending the salvarsan until the infectious storm had blown over, it was then resumed without further disturbance.

46. **Reflex Contracture of the Fingers from Distant Traumatic Joint Disease.**—Tietze gives a number of illustrations of the contracture he describes, saying that as it is impossible to bend the fingers intentionally in this way, the bending must be a reflex process from the joint trouble. He explains it as the result of efforts to spare the painful joint, as he has witnessed these contractures develop during acute articular rheumatism and during an attack of gout as well as with chronic arthritis and joint disease from severe trauma.

47. **Friedmann's Treatment of Tuberculosis.**—Wolff reports discouraging experiences with Friedmann's remedy, which he applied in 60 cases of pulmonary tuberculosis. Among 47 patients weighed at intervals, 28 lost weight, some losing from 8 to 22 pounds during the course of treatment. Seven of the patients have died since. He gives the details in regard to the symptoms and Roentgen findings in 26 cases before and for several months after treatment and reviews his extensive experimental work with the Friedmann remedy, saying in conclusion that the experiences of the last thirty years in the treatment of pulmonary tuberculosis have all proved so disappointing that he thinks the victims of tuberculosis should be left in peace now and not have their hopes being constantly aroused with new remedies, only to be dashed down again with most disastrous consequences for the patients.

48. **Helminths and Appendicitis.**—Aschoff does not believe the oxyuris is directly responsible for true appendicitis, but he thinks it can induce conditions which simulate appendicitis. This false appendicitis, however, can be cured by expelling the helminths, and consequently he urges that more attention should be paid to worms, especially in children, as expulsion of the helminths will ward off attacks of false appendicitis and thus protect against unnecessary appendicectomy. When the supposed appendicitis is merely trouble from helminths, removal of the appendix does not prevent recurrence of the false appendicitis attacks.

51. **Histologic Findings in Cancers after Radiotherapy.**—Heimann gives the microscopic findings in five cases in which the cancer had been excised after vigorous radiotherapy had been applied. The microscope revealed, he says, actually phenomenal modification of the cancer cells, and to a depth of 3 cm. The cancer cells beyond this point were not affected, but in four of the cases the cancer did not extend to the depth of 3 cm. and all the cancer cells seemed to have been destroyed.

53. **Atypical Gout in Connection with Asthma and Pulmonary Tuberculosis.**—Mayer thinks that the only reliable signs of gout outside of the paroxysmal attacks are the output of uric acid, both the natural output and the output after intravenous injection of 0.5 gm. uric acid. The healthy eliminate nearly all this amount of uric acid in the following two days, but patients with deranged metabolism of purin retain a large proportion of it. He applied this test to forty patients with chronic bronchitis and asthma and found that nine showed the characteristic retention of the uric acid typical of gout. In nearly every one of these cases there was a family history of gout and diabetes and the children showed the exudative diathesis, confirming Strümpell's assertion that true asthma is one manifestation of the exudative diathesis. The asthma in these cases was a constant asthmatic condition with occasional exacerbations and the latter were brought on by the same kind of injurious influences which are liable to bring on the attack of true gout. The curve of the output of uric acid during the exacerbation resembled in every respect that of the typical attack of gout. Treatment of the asthma as for gout alone had a decided beneficial effect.

He found the behavior of uric acid typical of gout also in some tuberculous patients. Several of the patients had been subject to attacks of gout before their tuberculosis developed and in all the gout became attenuated thereafter. The tuberculosis seems to be unusually mild in persons with a tendency to gout. Three of Mayer's patients were of the gouty type and had a mild tuberculous pulmonary affection displaying a marked tendency toward healing, but they were subject to recurring hemorrhages from the lungs. The hemorrhage could be brought on without fail by injecting a minimal dose of tuberculin. Tuberculin induces considerable leukocytosis and thereby an increase in uric acid. When this increase was superposed on an already abnormally high proportion of uric acid, as the total reached its highest point, hemorrhage in the lungs occurred. During the hemorrhage the curve of the output of uric acid was exactly like that of a typical attack of gout. That the tuberculin was not responsible for the hemorrhage is evident from the fact that there were no signs of a tuberculin reaction. The temperature persisted normal throughout.

The experiences related suggest that treatment as for gout alone may prove useful for both asthma and tuberculous hemoptysis in cases such as the above.

55. **Fatal Case of Bovine Tuberculosis in Boy of 14.**—Beitzke states that the case reported showed the severest pathologic anatomic findings of generalized tuberculosis that he has encountered in his fourteen years of necropsy work at Lausanne. The cadaver was that of a lad of 14 who was taken sick with pain below the diaphragm, vomiting, emaciation and diarrhea. By the fourth month he began to cough, ascites developed, and he died six months after the first signs of anything wrong. Necropsy revealed generalized tuberculosis of exceptional severity and extent, evidently starting in the abdomen. Inoculation of animals confirmed the bacteriologic findings of bovine tubercle bacilli. The eight other children and the parents were healthy and it was learned that

this boy used to spend much time at a neighboring farm and drank a glass or two of milk at the milkings, and some of the cows here discharged tubercle bacilli in their milk. Beitzke adds that the proportion of fatal cases of bovine tuberculosis in man is even larger than with tuberculosis from human tubercle bacilli. He has compiled 126 cases of bovine tuberculosis in accessible literature in addition to Weber's 138 cases. He remarks that the case here reported is the first instance to be published in which the bovine tubercle bacilli were actually cultivated from the milk of the cows in question.

59. **Diagnosis of Commencing Insufficiency of Gastric Secretion.**—Ehrenreich expresses surprise that so little attention has been paid to the significant change in the secretory functioning of the stomach in the direction of stimulation or paralysis. Irritation stimulating to excessive functioning or paralysis preventing functioning are the opposite poles corresponding to benign and malignant stomach affections. Determination of conditions in these respects is of far greater diagnostic import than the amount of free hydrochloric acid in the stomach content. He has found that the acidity of the residue in the fasting stomach, compared with the acidity after the test-breakfast, gives a proportion altogether different with simple ulcerative and cancerous conditions. In the benign affections the acidity was higher or at least as high as in the fasting residue while the reverse was constantly the case with cancer. The findings in six gastric or duodenal ulcer cases showed acidity from 0 to 56 and after the test-breakfast from 16 to 80, the increase ranging from 12 to 43. In six cancer cases the acidity in the fasting content was 0 in two cases and from 16 to 82 in the others. After the test-breakfast it was 0 in four cases and had dropped from 82 to 72 in another. In four other cases the findings were equally conclusive and an operation confirmed the presumptive diagnosis.

With cancer there is a residue retained in the fasting stomach and it acts as a constant irritant to induce secretion. If the stomach is then pumped clean and the test-breakfast taken, the secretory apparatus is fatigued by the preceding irritation. If there is any tendency to insufficient secretory functioning it at once becomes manifest by the inadequate response to the stimulus from the test-breakfast. With ulcer, on the other hand, the tendency is to excessive secretion, and the stomach responds to the second stimulus with considerable secretion. The principle of the test is thus to supervise the secretory behavior of the stomach after it has been whipped up by two stimuli applied in turn. The findings seem to be more reliable when the total amount of the test-breakfast equals the total amount of residue content—bulk apparently influencing the response to a certain extent. The method is applicable only in cases with considerable retention.

62. **Surgery on the Battle-Field.**—Franz describes the different projectiles in use in the different armies now in the field and gives a number of practical suggestions when a battle is impending. Among them he mentions the necessity for lubricating the syringe with ointment, and having one syringe for morphin and one for camphorated oil, carrying a bottle of each, the morphin in a 3 per cent. solution.

Correspondenz-Blatt für Schweizer Aerzte, Basel

August 1, XLIV, No. 31, pp. 961-992

67 *Operative Treatment of Extreme Rachitic Curvature of Long Bones. (L'osteosynthèse de Lambotte dans le traitement des déviations rachitiques.) A. Machard.

68 The Physical and Biologic Bases of Radiotherapy. (Strahlentherapie.) H. E. Walther. Commenced in No. 30.

August 8, No. 32, pp. 993-1024

69 Functional Importance of the Musculature of the Arteries. W. R. Hess.

August 22, No. 34, pp. 1057-1088

70 *Pathology of the Liver and Tests of Functional Capacity. O. Steiger. Commenced in No. 33.

71 Gummatous Ulceration in Vulva and Vagina. K. Bollag.

67. **Treatment of Rachitic Curvature.**—Machard has been much pleased with his success in straightening rachitic long bones by means of Lambotte's method of extension and screwing the bones to a metal plate. No foreign body is left permanently in the tissues. One assistant is necessary, but all the handling is done with instruments. When the dry cotton gloves come through the whole procedure still dry and without a trace of blood, this guarantees that there has been no direct contact with the tissues. Correction of the deformity may require correction of rotation and preventing overriding from traction by muscles, as well as the lengthwise straightening of the bone. As the bones of children between 3 and 7 are so weak, he makes the screws, clutch and plate of aluminum, the whole weighing less than 100 gm. In his twelve cases the children began to use the limb the second day after the operation and the fixation plate was discarded by the eighteenth to the twenty-six day. The right femur was thus lengthened by 6½ cm. and the left by 5½ in one child of 6, and in a child of 5 the leg below the knee was made 7 cm. longer. Both these children now walk without support while before neither could even stand alone. He never witnessed any tardy by-effects, and the healing seems to leave more natural conditions than when a plaster cast is applied. The plate also corrects rotation, he says, and maintains the corrected position after the osteotomy better than any other technic. Consolidation is prompt and the scar left in the bone is minimal. The procedure should of course be reserved for the more serious cases as even at the best it requires a long incision for the osteotomy, and the four screws are foreign bodies liable to set up infection. There was suppuration in one screw-hole in one of his cases; all the others healed without complications.

70. **Functional Tests in Liver Disease.**—In this communication from Eichhorst's service at Zurich, Steiger compares the findings with a number of tests of the functional capacity of the liver. By applying several tests it is possible to obtain very good oversight of conditions in the liver as he shows by tabulation of the findings in fourteen typical cases of various stomach, pulmonary or liver affections. The findings with catarrhal jaundice and cirrhosis of the liver were more characteristic than we can obtain with any functional tests applied to the spleen or pancreas or even in certain forms of kidney disease. Insufficiency on the part of the liver is demonstrated, he affirms, when alimentary galactosuria coincides with alimentary levulosuria (determining also the sugar content in the blood-serum), and there is also a positive reaction to the camphor-glycuronic acid test; an abnormally low fibrinogen content in the serum, and pathologic urobilinuria.

The research reported apparently demonstrates that the amino-acid output alone is the only really instructive method among the chemical tests, but the technic for this and the camphor-glycuronic acid test of the capacity of the liver for synthesis are too complicated for general use.

On the other hand, the determination of pathologic urobilin in the urine is comparatively simple and within the reach of all. It indicates absolute insufficiency on the part of the liver unless there is an abnormal production of urobilin in the intestines from pathologic destruction of blood.

The carbohydrate tests with 100 gm. levulose or 40 gm. galactose permit finer differentiation if one is not content with merely noting the presence of the sugar in the urine but repeats the tests with varying amounts until the exact degree of tolerance for each is ascertained. Hohlweg has found that the tolerance of the liver for levulose is reduced in direct proportion to the extent to which the parenchyma is damaged. He gives 50, 75 or 100 gm. of levulose in 300 c.c. of milk, fasting, and examines the urine every two hours thereafter for six hours. Three days later he repeats the test with a smaller amount of levulose. Determination of the sugar in the blood-serum instructively supplements the levulose test.

Alimentary galactosuria is not pronounced with disturbance in the liver from cholelithiasis or simple congestion. With cirrhosis of the liver or cancer there is merely moderate galactosuria, but with catarrhal icterus the galactosuria is always extremely pronounced. The patient takes 40 gm. fasting and the urine is collected in two six-hour periods. It is tested for galactose by the Trommer or Nylander technic and polarimetric examination.

The discovery that the liver controls the fibrinogen content in the blood has given us another test for the functional capacity of this organ. The normal content in the blood is about 0.3 or 0.4 per cent., but it falls to 0.05 per cent. with cirrhosis of the liver or catarrhal jaundice. It is readily estimated, Steiger adds, by weighing the blood-clot after addition of calcium chlorid, or by heating the plasma to 59 C. for twenty minutes.

Deutsche medizinische Wochenschrift, Berlin

August 6, XL, No. 32, pp. 1601-1648

72 *Threatening Conditions in Acute Heart Disease. (Behandlung der bedrohlichen Zustände bei der akuten Endo-, Myo- und Pericarditis.) Grober.
73 *Cystic Tumors in the Suprasternal Fossa. (Zystische Geschwülste im Jugulum.) Riedel.
74 *Disappearance of Typhus, Relapsing Fever and Plague from Civilized Countries. (Das Aussterben der "Krankheiten der Unkultur.") K. Kisskalt.
75 *The Coagulo-Reaction in Syphilis. (Eine Gerinnungsreaktion bei Lues.) L. Hirschfeld and R. Klinger.
76 *Operation to Restore Tibia. (Operationen zur Deckung grösserer Tibiadefekte.) H. Andree.
77 Operative Treatment of Hour-Glass Stomach. (Sanduhrmagen.) A. Pers.
78 *Protective Ferments against Maize-Albumin in Serum of Pellagrins. (Schutzfermente gegen das Maiseiweiss—Zeine—im Blute der Pellagrösen.) J. J. Nitzescu.
79 *Boas' Phenolphthalin Test for Occult Blood. H. Schirokauer and I. Boas.
80 Inefficacy to Date of All Mechanical Devices to Cure Impotency. (Bemerkungen über mechanische Mittel zur Behebung der Impotenz.) G. Flatau.
81 Standardization of Graduated Syringes. (Eichung medizinischer Spritzen.) W. Roerdansz.
82 The Organization of the French Service for Care of the Wounded. (Die französische Kriegskrankenpflege.) Adam.

August 13, No. 33, pp. 1649-1664

83 Angina Pectoris. Grober.
84 Radiotherapy of Cancer. (Ergebnisse der Strahlenbehandlung der Karzinome.) O. Küstner and F. Heimann.
85 Hypophysis Extract in Treatment of Amenorrhea. E. Kosminski.
86 Venereal Disease in the Troops Now in the Field. (Venerische Krankheiten bei den im Felde stehenden Truppen.) A. Neisser.

August 20, No. 34, pp. 1665-1680

87 Treatment of Threatening Conditions in Acute Leukemia, Pseudoleukemia and Hemorrhagic Diatheses. Grober.
88 Tuberculosis of the Thyroid. Permanent Cure for Twenty-Two Years to Date after Operation on Tuberculous Thyroid. (Kropftuberkulose.) Riedel.
89 Blood-Platelet Preparation to Arrest Bleeding. (Coagulen Kocher-Fonio.) E. Juliusburger and T. v. Mutschenbacher.
90 Operation for Embolism. (Beitrag zur Gefässchirurgie.) L. Dreyer.
91 *Phenolphthalin Test for Occult Blood in the Stools. A. Schneider and v. Teubern.

72. **Acute Heart Disease.**—Grober emphasizes the importance of the salicylates in acute endocarditis, myocarditis or pericarditis even when there is nothing to indicate articular rheumatism. Among other measures, cold applications to the heart not only give subjective relief but are useful in keeping the patient still. This is of extreme importance, and the psychic treatment to tranquillize and impress on the patient the necessity for keeping still is a vital factor in the cure. Effusion in the pericardium is frequently accompanied by an effusion in the pleura, and when the latter was tapped the effusion in the pericardium was spontaneously absorbed in some of his cases. He gives an illustration of the technic for puncture of the pericardium. When done gently there need be no fear of perforating the ventricle wall.

73. **Cystic Tumors in Suprasternal Fossa.**—In the case reported by Riedel a cystic tumor was removed from a woman of 77, supposed to be a cystic goiter or dermoid cyst, but the microscope showed tuberculosis. There can be no doubt that it was secondary to an isolated tuberculous process in the thymus. A second operation was necessary five weeks later but both were restricted to clearing out the focus and draining and a complete cure was soon realized. Riedel states that cystic goiter was evident in 148 of his 1,070 operations for goiter at Jena. The cyst generally starts in a side lobe. Dermoid cysts in this region are also comparatively frequent but the above case of tuberculosis was the only one of the kind he has encountered. It was remarkable further in the acute development of the cystic process; it first manifested itself only three weeks before it compelled the operation.

74. **The Disappearance of Typhus, Relapsing Fever and Plague.**—Kisskalt remarks that the recent discovery that typhus and relapsing fever are transmitted mainly if not exclusively by the louse readily explains their vanishing from a country as habits of cleanliness exterminate vermin. This also has cooperated in the disappearance of bubonic plague, as fleas and rats have been brought under some control. Another important factor may be the fact that the black rats have been driven out of western Europe in the last century or so by the brown rats which are not so tame as the black house rat. There is a disease among rats in Europe which causes chronic lesions almost identical with those of plague in rats. It is caused by the *Bacillus pseudotuberculosis rodentium*, and this resembles the plague bacillus so closely that there is much to sustain the assumption that this is the degenerated descendant of the original bacillus of virulent rat plague in former centuries, modified by countless passages through rats.

75. **Coagulation Test for Syphilis.**—Practically the same article was summarized in these columns quite recently, page 1060. Hirschfeld and Klinger have examined to date the serum of 250 persons for the coaguloreaction. The findings paralled those of the Wassermann test as closely as the range of positive reactions with the latter test with different extracts. The coaguloreaction is the first method—outside of the immunity research technics—which reveals a specific change in the condition of the blood, and it is the only one yet advanced, they say, based on the physiology of coagulation. Syphilitic serum inhibits coagulation with their technic. A color reaction can be obtained by tinting the fluid with a suspension of a stain and then shaking the fluid; the particles of the stain get caught in the fibrin and the fluid becomes decolored.

76. **To Remedy Defects in the Tibia.**—Andree comments on the necessity for saving all the epiphysis zones to insure further growth. There are four in the normal tibia and fibula together, but when the upper or lower on one of these bones is lost, approximately normal conditions for growth can be secured by slitting the other bone in the center and implanting the slit-off part in the marrow of the bone with the large defect. The slit bone then forms a Y or a reversed Y. This secures three epiphysis zones. The conditions for further growth are thus good from the start, and the bones soon grow strong and in normal proportions. This method of transplanting a slit-off branch of the adjacent fibula, holding it in place with a pedunculated periosteum-bone flap, is so simple that no special skill is required, while the results were most excellent in the case reported. There is no shortening of the leg although the lower half of the tibia had been entirely destroyed. The patient was a girl of 12 and the operation was done a year after an osteomyelitic process had destroyed the entire lower half of the tibia. The weight-bearing on the foot is also normal with this technic. Six illustrations accompany the article.

78. **Serodiagnosis of Pellagra.**—Nitzescu writes from Bucharest to call attention to the possibility of early serodiagnosis of pellagra by the presence of protective ferments against maize albumin—zeinolytic ferments. The maize albumin or zein seems to have a toxic action, and the ferments formed to combat this linger in the blood long after other symptoms have disappeared when maize is dropped from the diet. In a recent case a patient with merely nervous manifestations was shown by the serodiagnostic test to be suffering from otherwise latent pellagra, and later other characteristic symptoms developed. The response was particularly pronounced in eight cases with predominant gastrointestinal disturbances. The reaction was negative in the fifty-eight cases only in two pellagrins who had been in the hospital for over two years and had eaten no maize during this time and had no symptoms left except slight mental confusion at times. The zein was extracted according to Osborne's directions and the Abderhalden ninhydrin technic was followed otherwise.

79-91. **The Phenolphthalin Test for Occult Blood in the Stools.**—Boas replies to Schirokauer that the possible sources

of error he suggests are purely theoretical. They have no practical importance unless it can be demonstrated that the findings are positive in a normal person who has eaten no fish or meat for several days beforehand. This he has been unable to show. Schneider and von Teubern write from the university policlinic at Bonn, in charge of Professor Krause, that the findings were constantly accurate in sixty cases tested, including tests on themselves after several days of exclusively milk-vegetable diet. The test proved more delicate than the Weber or aloin tests, and is a convenient and reliable method for determining the presence of invisible blood in the stools. (One of Boas' latest communications on the subject was reviewed in THE JOURNAL, March 29, p. 1035.)

Therapeutische Monatshefte, Berlin

August, XXVIII, No. 8, pp. 449-608

92 *Treatment of Pleurisy, Emphysema and Atelectasis. (Therapie der Krankheiten der Respirationsorgane.) L. Hofbauer.
93 *Treatment of Leukemia. B. Hahn.
94 Favorable Influence of Salvarsan in Case of Advanced Tabes. H. Becher and R. Koch.
95 Friedmann's Treatment of Tuberculosis; Nineteen Cases. H. Becher and H. Waegeler.
96 *Injection of Alcohol to Cure Prolapse of the Rectum. (Mastdarmvorfall.) Roux.
97 *Roentgen Treatment of Keratitis from Acne Rosacea. L. Pick.

92. **Treatment of Pleurisy and Emphysema.**—Hofbauer remarks that if operative measures are not required in pleurisy, the tendency to effusion should be checked with calcium lactate or other salt, absorption promoted with salicylates, superheated air and the "Karell cure," supplemented by appropriate breathing exercises. Hofbauer emphasizes the value of the latter in particular, confirming the importance of respiratory movements in promoting absorption of fluid in the pleura. The Roentgen rays have shown that when reclining on one side, the half of the diaphragm on the under side is drawn high up and makes exceptionally extensive excusions, while the half of the diaphragm on the uppermost side makes exceptionally small excursions. This renders it easy to induce maximal active respiration on one side with minimal on the other, and thus promote absorption to the utmost while sparing the rest of the pleura. To accomplish this the patient must recline on the side affected and practice abdominal breathing; the earlier this is done the better. Sometimes the absorption may proceed so rapidly under this that the temperature runs up. This can be guarded against by having the patient recline and exercise in this way only a short while at a time, and gradually, by a sort of immunizing process, there soon comes to be no further febrile reaction. The procedure is a form of autoserotherapy, and it aids also in preventing development of adhesions and cicatricial bands, and it tones up the diaphragm.

In treatment of emphysema the main point is to train the lungs to empty themselves more effectually. Breathing exclusively through the nose, with long tranquil expiration, the auxiliary muscles of expiration become trained to work better, and he has devised an apparatus which exerts intermittent pressure on the abdomen just as the natural expiration process stops. The apparatus by compressing the abdomen prolongs the expiration, and the patient soon learns to imitate this and thus force up the diaphragm in this way naturally by utilizing the hitherto neglected forces of the abdominal musculature. Patients with emphysema are permanently relieved in this way; the signs of cardiac insufficiency subside and the circulation in general is improved. He calls this method of treatment *Summtherapie*, as the patient makes a humming noise during expiration coincident with the signal of the apparatus, either a light or buzzer working during expiration.

93. **Leukemia.**—Hahn remarks that while the last few years have given us a few more weapons to fight leukemia, yet its cause is as much of a mystery as ever. A vigorous course of treatment is not indicated as a rule unless there is progressing anemia, distressing leukemia tumors, or the whites are increasing beyond measure. The reason for holding back with energetic treatment is on account of the acute, almost explosive, aggravation of the condition which has occurred in many cases when all seemed to be going exceptionally well under treatment. The relapse then may prove far worse than the original trouble for which the treatment was started.

The Roentgen rays seem to check the growth of the hyperplastic white-corpuscle-producing tissues, but overdosage may prove fatal, and too small doses may actually overstimulate these tissues: In Decastello's case of chronic myelosis the whites dropped after three mild exposures from 720,000 to 400 with 0.9 per cent. neutrophils and the patient died from hemorrhages. Schwarz has reported disastrous results from stimulation of functioning by minute doses. In this group belong the cases of leukemia developing in professional roentgenologists; Heinecke has recently compiled six cases of this kind. Hahn advises systematic exposure of every accessible gland in the lymphatic form, but with myelogenous leukemia exposure of the enlarged spleen alone answers the purpose. In rebellious cases and recurrences he has witnessed benefit from exposing the long bones of the legs between the series of other exposures. He noted a marked improvement in the symptoms and general health in 75 per cent. of his cases, while the others were not influenced (6 in 23 cases). Béclère has reported no failure in his 12 lymphatic and 93 myelogenous cases. Radio-active substances fail in about 20 per cent. of the cases, according to the literature to date. The action and effect seem to be about the same as with the Roentgen rays; the lymphatic form seems to be less amenable to the Roentgen-ray reaction and recurrence is inevitable.

Benzol is commended by some and denounced by others. It certainly should not be given with disease of the liver or kidneys, or with catarrhal intestinal trouble, and it should be suspended when the leukocytes have dropped to 20,000 or 25,000, before they have got down to normal figures. Hahn's experience suggests the advantage of changing from one method of treatment to another; one seems to pave the way for a better utilization of another, while both can be applied with lesser dosage, possibly commencing with the Roentgen rays and continuing with benzol, not giving above 1 gm. a day of the latter. If myeloblasts appear in large numbers under Roentgen treatment he changes to thorium X and follows with a vigorous course of arsenic. When to start treatment again with recurrence is still a question. It is his practice to keep up the Roentgen exposures after subsidence of symptoms, giving every week or two a fraction of an erythem dose, and lately has been giving occasionally 0.5 or 1 gm. of benzol a day, carefully supervising the liver and kidney functioning, and resorting to vigorous measures at the first signs of any flaring up of the process. With leukemia, myelosis and lymphadenosis it is better to hold back from vigorous measures on account of the danger of exacerbation unless one's hand is forced; then arsenic should be given a trial first. With acute leukemia all treatment seems to be hopeless, but as it is not always possible to differentiate the acute form, thorium X plus a vigorous course of arsenic should be tried.

96. **Treatment of Prolapse of the Rectum.**—Roux advocates anew his method of treating prolapse, the advantages of its simple technic having been amply proved during the eight or ten years since he began to apply it. He injects alcohol into the connective tissue around the rectum, outside the intestinal wall. Under general anesthesia the needle is inserted back of the rectum, on the median line, and alcohol is deposited here and on each side, between the rectum and coccyx and sacrum. The needle is then introduced again on each side farther around, but the pouch of Douglas is respected. He has thus injected from 2 to 4 or 6 c.c. of alcohol in children, with no untoward results, not even when up to 10 c.c. was injected. A roll of gauze, smeared with petrolatum is placed between the buttocks and brought up entirely around the abdomen holding the rectum firmly in place. This is left for three to eight days or more. Esthetic considerations here are the only drawback to this technic. Adults can be kept constipated for this period, but defecation has to be permitted to children.

97. **Treatment of Keratitis Secondary to Acne.**—Pick calls attention to the excellent effects he has realized in eight cases of this most tenacious affection with Roentgen treatment applied to both the eye and the acne rosacea on the face. His youngest patient was 28 and the oldest 70; the younger the patient the more readily the eye becomes involved while the older the patient the more rebellious to therapeutic measures. He applied the Roentgen rays at four- to eight-day intervals each to a mild erythem dose and found that under from four to six exposures even severe and necrotic cases subsided to a complete cure. He never witnessed anything suggesting injury to the eye from these doses, and no other measures were necessary except rinsing with a tepid mild disinfectant and smearing the lids with a 20 per cent. zinc-petrolatum salve. Other physicians who have tried it also confirm the certain and prompt recovery under roentgenotherapy, and the abortion of incipient recurrence.

Wiener klinische Wochenschrift, Vienna

August 20, XXVII, No. 34, pp. 1227-1242

98 *Operation on Side Wall of Nose through Window in Septum. (Perseptale Operationen an der lateralen Nasenwand.) K. Kofler.
99 The War and Tuberculosis. (Krieg und Tuberkulose.) J. Kollarits.

98. **Perseptal Operations on Walls of Nose.**—Kofler has been impressed with the advantages of working on the interior of the nose and lacrimal sac through a temporary window cut in the septum. He has been applying this technic for a year and a half and here reports eight cases with seven illustrations of the exact technic. In most of the cases the septum was deformed and required correction, but even when this was not the case, the benefit from direct inspection and facility of access confirmed the advantages of this technic. One patient had had rebellious suppuration in the lacrimal sac for a number of months; the others had a suppurative process in the antrum of Highmore on one or both sides, dragging along for years until promptly cured by the thorough operation possible by the perseptal technic.

Zentralblatt für Chirurgie, Leipsic

August 22, XLI, No. 34, pp. 1385-1408

100 Adhesive Plaster Dressing for Harelip Operations. (Zur Frage des Heftpflasterverbandes bei Hasenschartenoperationen.) C. Helbing and H. Matti.
101 Wire Extension from the Heel. (Die Drahtextension am Calcaneus.) E. Gelinsky.

Zentralblatt für Gynäkologie, Leipsic

August 22, XXXVIII, No. 34, pp. 1185-1200

102 Preparation of Blood-Platelets to Arrest Hemorrhage in Gynecology. (Anwendung des Koagulen Kocher-Fonio in der Gynäkologie.) H. Albrecht.
103 Rubber Mitten for Management of Normal Delivery. (Der Gummifäustling zur Leitung der Spontangeburt.) E. Meyer.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 13, XXXV, No. 97, pp. 1017-1024

104 *Unusual Complications of Typhoid in Two Children. A. Melchiorri.

August 20, No. 100, pp. 1049-1056

105 *Recrudescence of Tuberculosis Under Influence of Intercurrent Disease or Trauma. (Studio delle tubercolosi terminali.) V. Bellizzi.

104. **Typhoid Fever in Children.**—In the two cases described pains and edema in the scrotum were accompanied by bilateral radial paralysis in one case and total aphasia, complete by the fourth day. In both there was pronounced hypotonus at first, soon yielding to hypertonus. One of the children became extraordinarily emaciated and developed decubitus. Both recovered but they were in the hospital three and four months.

105. **Terminal Tuberculosis.**—Bellizzi applies this term to cases in which tuberculosis developed and ran a fulminating course as the vital processes were depressed from some other cause. The first patient was a syphilitic woman of 55, with cirrhosis of the liver, who died a few days after developing symptoms on the part of the heart and lungs, without fever. Necropsy revealed confluent miliary tuberculosis, evidently quite recent and primary. In the other case a young woman died of fulminating miliary tuberculosis and necropsy showed that the trouble was the flaring up of old latent tubercles. The tubercle bacilli had evidently been long walled in but when something happened to lower the vitality the bacilli made their way out and set up new speedily fatal processes.

Pediatria, Naples

July, XXII, No. 7, pp. 481-560

106 *Luetin Reaction in Inherited Syphilis. S. Cannata.
107 *Influence of Fat on Gastric Digestion of Milk. S. Riva Rocci.
108 Desiccated Milk in Infant Feeding. (Il latte in polvere nell' alimentazione dei lattanti.) G. Finizio.
109 *Scarlet Fever Developing in Surgical Patients. (Scarlattina da ferita.) F. Luna.
110 *Congenital Rachitis. M. Reano.
111 Local Necrosis Following Skin Tuberculin Test. (Incidenti secondarii alla cutireazione di v. Pirquet. F. Fonzo.

106. **Luetin Reaction in Inherited Syphilis.**—Cannata's experience has been quite favorable with Noguchi's technic for serodiagosis of inherited syphilis. The findings were not always correct, but the proportion of correct responses was larger than with the Wassermann test in the 100 syphilitic children and the 30 non-syphilitic controls tested. In the latter group there was never any luetin reaction, and the reaction was negative in 17 of the 51 children less than a year old with positive signs of syphilis; the Wassermann in this group gave a negative response in 35. In older children the tests paralleled each other more closely. In a total of 56 cases with negative Wassermann the luetin test was positive in 41; the advantages of thus revealing the inherited taint early are obvious.

107. **Influence of Fat on Gastric Digestion of Milk.**—Riva Rocci states that the presence of fats in his experiments much facilitated the digestion of milk in the test-tube by the digestive ferments in an acid medium. He theorizes to explain this by assuming that the droplets of fat throughout the mass of coagulated milk hold the particles apart enough to permit capillary action, and thus promote the diffusion of the digestive ferments through the mass and their action on a larger surface of the particles forming it.

109. **Scarlet Fever in Surgical Patients.**—Luna witnessed the development of typical scarlet fever in three children after tracheotomy for diphtheria. In two of the children mediastinitis and purulent pleurisy developed and both died. The third child recovered after passing through nephritis during desquamation. The location of the wound in cases of "surgical scarlet fever" has an influence on the prognosis. When the wound is on an arm or leg, for instance, infection of the glands in the region is not so serious as when the glands are in the chest or throat. As a rule the "surgical scarlet fever" is mild and is in reality merely a scarlatiniform eruption around a suppurating wound. But a number of cases are on record with the typical angina and the rest of the syndrome, but even with these recovery is the rule without complications. Hahn has recently reported seven cases of scarlet fever developing consecutive to operations for empyema and three secondary to accidental wounds, burns, etc.

110. **Congenital Rachitis.**—Reano relates that he has examined 854 newly born infants at Turin seeking for signs of rachitis and comparing the signs found with the development of the children, especially in regard to appearance of true rachitis later. The size of the fontanels, the greater or less hardness of the skull, the existence of parchment-like areas, abnormal palpation findings in the articulations between the costal cartilages and the sternum—none of these findings can be regarded as signs of rachitis in the newly born, as all are liable to become modified to normal conditions as the child grows when the environment, the inheritance and the food do not predispose to rachitis. Parchment areas in the skull subsided spontaneously in about 50 per cent. of the cases in which they were found and generally in two or three months, without rachitis developing later. In the other 50 per cent. signs of pronounced rachitis were manifest when the sixty-four children were reexamined at 6 months of age.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

June 6, LVIII, No. 23, pp. 2045-2230 and Supplement

112 *Remote Sensations from Faradic Stimulation of Points in Post-Central Gyrus in Conscious Patients. ("Sensible punten" op de schors der groote hersenen van den mensch.) C. T. van Valkenburg.

113 Fetus Compressus; Two Cases. M. Kamerling.

June 13, No. 24, pp. 2231-2338

114 Animals Trained to "Think." (Denkende dieren: het aandel der menschen.) G. van Rijnberk.

115 *Examination of Heart through the Esophagus. (Onderzolk van het hart van den slokdarm uit.) C. E. Benjamins.

June 20, No. 25, pp. 2339-2418

116 The Workings of Workmen's Compensation Legislation. (Gevolgen der ongevallenwet.) P. Kooperberg.

117 Anatomy of the Nose. (Het kleppenstelsel van den neus.) P. J. Mink.

118 *Alternating Hemiplegia Following Injection of Alcohol into the Gasserian Ganglion. G. C. Bolten.

112. **Sensory Foci in Brain Cortex.**—Van Valkenburg gives details of two cases in which during an operation on the brain during local anesthesia alone he applied faradic stimulation to the postcentral gyrus and found that this induced sensations in the fingers and around the mouth. He gives diagrams of the sensory points and the regions they control, comparing his findings with those of Cushing and Krause in this line. The foci were well defined. The patients were young men of 17 to 25, with epileptiform seizures for one or four years. They said that the sensations from faradic stimulation resembled those at the aura of their seizures.

115. **Examination of the Heart by Way of the Esophagus.**—Benjamins describes the technic for esophageal cardiography, auscultation of the heart sounds and other means of studying the action of the heart through the esophagus, and gives characteristic findings. He ties a finger condom on the tip of a rubber tube and introduces it for about 32 or 35 cm. from the teeth. Then the condom is inflated and the whole connected with a recording drum and the movements of the left auricle then register themselves on the drum—an esophageal cardiogram which can be usefully studied synchronously with the electrocardiogram as he shows by a number of tracings.

118. **Hemiplegia Following Injection of Alcohol into the Gasserian Ganglion.**—Bolten's patient was a woman of 58 who had suffered for years from extremely severe trigeminal neuralgia of all three branches. She had intense headache after the injection and was given morphin. The temperature ran up to 104 F. and symptoms of paralysis on either side alternated but gradually improved so she is now able to be around. Bolten adds that the neuralgia was conquered by the operation, and that the symptoms observed should be credited to the unusual neuropathic taint in the family. This exceptional occurrence should not bring discredit on the deep alcohol treatment of trigeminal neuralgia. That the patient has practically entirely recovered shows that no serious damage was done.

Hospitalstidende, Copenhagen

August 26, LVII, No. 34, pp. 1049-1080

119 *Further Research on Spiroptera Cancer in Rats. (Fortsatte Undersøgelser over Spiropteracarcinomet hos Rotten.) J. Fibiger.

119. **Animal-Parasite Cancer in Rats.**—Fibiger has continued his study of the cancers found in the stomachs of rats and evidently connected with the special parasite discovered in them. It seems to be a new species of *Spiroptera* and it has been found to date only in the numerous rats infecting three sugar warehouses and among these only in the decumanus. None was found in 1,100 rats from other parts of Denmark nor in 350 from other countries. The cockroach seems to serve as an intermediate host, and Fibiger thinks that these insects probably were brought with the cargo of sugar from the West Indies. The parasites were found in 7 of 8 dead rats sent him from one of these West Indian ports and in 52 of 70 cockroaches. In 6 rats and 150 living cockroaches from another West Indian port he found the nematode in 3 of the rats and in 27 of 45 cockroaches examined. These findings confirm that the parasite belongs to a tropical species. It can be communicated to other varieties of rats and other rodents, and other insects beside the cockroach can serve as the intermediate host, the bedbug and the meal-worm. He fed 91 rats with infected cockroaches. Some have been under observation since June, 1912, and no less than 12 have developed carcinoma in the stomach, the findings corresponding in every respect to those on which he published his first report. The article is not concluded in this issue of the *Hospitalstidende*. [His previous communication was discussed editorially in The Journal, April 5, 1913, p. 1077.]

Ugeskrift for Læger, Copenhagen

July 30, LXXVI, No. 31, pp. 1353-1388

120 *Trauma and Osteomyelitis. H. C. Slomann.

August 6, No. 32, pp. 1389-1418

121 Mode of Therapeutic Action of Sunshine. (Om den moderne Helioterapis Virkemaade.) T. Brinch.

122 Remittent Hydronephrosis. G. Espersen.

August 13, No. 33, pp. 1419-1448

123 *The Pirquet and Salve Tuberculin Tests on Children. (Om kutane og perkutane tuberkulinreaktioner.) Monrad.

120. **Trauma and Osteomyelitis.**—Slomann's article is based on the experiences of the wage-earners' sickness insurance companies in Denmark, 1910 to 1912. There were 2,128 cases of sickness among the 140,000 industrial workers insured and 1,940 among the 300,000 field workers. These figures include 32 cases of osteomyelitis for which a traumatic origin was claimed, but the connection was not proved in 14. Slomann compares these cases with 104 cases of osteomyelitis at the Copenhagen public hospital in the last ten years. It developed after tonsillitis in 7; after enteritis in 4; after pyuria in 2 cases and after furuncles or other superficial suppuration in 9. The antecedents were not known in 54 cases. In 33 cases trauma was incriminated, but in 10 there had been an interval of three weeks or more without symptoms so that the connection with the trauma seems out of the question. The remaining 23 cases were unmistakably of traumatic origin. In 3 the skin had been injured so that inoculation of germs was probably the main factor. In the others the trauma had been a contusion and the osteomyelitis had developed in less than eight days in the injured region.

Spontaneous osteomyelitis is shown by his figures to be four times more common than the traumatic; the latter formed 19.2 per cent. of the cases reviewed. The period of incubation was at longest only twelve or fourteen days and in 3 cases there were fever and more or less pain and swelling the same day as the contusion. The connection with the trauma is plausible if the accident was of such a nature as to render injury of the bone-marrow probable; it need not have directly affected the spot involved, as for instance when the whole skeleton or a large part of it is jarred by a severe fall. A connection with the trauma may be accepted if the osteomyelitis develops directly after a period of extravasation of blood, swelling, tenderness, etc., in the region affected by the trauma. When this is the case the interval may be even longer than two weeks and still the osteomyelitis form part of the traumatic syndrome.

123. **The Tuberculin Skin and Percutaneous Reactions in Children.**—Monrad has had the Pirquet test applied to 3,408 children and the Moro salve test to 333. The latter is so simple and convenient and the findings parallel those of the Pirquet so closely, that he wonders it is not more generally used. The two reactions were concordant in 323 of the 333 cases and in 6 of the 10 cases in which the reactions conflicted, the course of the cases confirmed the salve-test findings. A negative response to the Pirquet test, he declares, may be accepted as excluding tuberculosis with 97 per cent. certainty. A positive reaction under 1 year of age indicates always active tuberculosis; between 1 and 2 years it indicates this in six-sevenths of all the cases and in two-thirds of all between 2 and 5. Over 10 the conditions are more as in adults, about two-thirds of the positive reactions being traceable to inactive tuberculosis.